

WARMLITE

A photograph of a person lying on their back in a field of red flowers. The person is seen from the back, with their arms bent and hands near their head. The field is dense with red flowers, possibly poppies, and green grass. The lighting is warm, suggesting late afternoon or early morning.

PERHAPS THE INNER NEVER LOST RAPPORT WE HOLD WITH THE EARTH, LIGHT, AIR, TREES, ETC. IS NOT TO BE REALIZED THROUGH EYES AND MIND ONLY, BUT THROUGH THE WHOLE CORPOREAL BODY . . . SWEET, SANE, TILL NAKEDNESS IN NATURE!

. . . THERE ARE MOODS WHEN THESE CLOTHES OF OURS ARE NOT ONLY TOO IRKSOME TO WEAR, BUT ARE THEMSELVES INDECENT. PERHAPS INDEED HE OR SHE TO WHOM THE FREE EXHILIRATING ECSTASY OF NAKEDNESS IN NATURE HAS NEVER BEEN ELIGIBLE, HAS NOT REALLY KNOWN WHAT PURITY IS --- NOR WHAT FAITH OR ART OF HEALTH REALLY IS.

Walt Whitman.

WARMLITE DEVELOPMENT

Stephenson Warmlite equipment has been developed over many years by an aerodynamicist and mechanical engineer, in a successful effort to improve warmth, comfort, and convenience, while minimizing weight. Although development time has been long due to the requirements of extensive personal testing and limited time availability, it has been highly successful. Contributing to this success has been availability of a wealth of information on heat transfer, aerodynamics, moisture control and new materials resulting from tests and studies for space-life support systems. These efforts have resulted in warm ultra lightweight sleeping bags; the first down bags with integral foam bottoms and double side zippers; the lightest weight most wind stable tents, *Filmgap*, the first major improvement in lightweight insulation since the discovery of goose down, improved ponchos, vapor barrier clothing, and a backpack with carry system more comfortable than ever before. These items have all been extensively used by individuals and expeditions in practically every mountain range and wilderness area of the world, proving their usefulness and durability.

Contents**Ordering p. 4****No Sweat Shirt p. 4 - 5****Sleeping Bags p. 6 - 13****Tents p. 14 - 19****Back Pack p. 19 - 21****Materials, Boats, Poncho, Mitts p. 23****Prices p. 26****Love Letters p. 28, 33****Other Sources p. 30****Minus 90° — McKinley Story p. 34****BROCHURE PICTURES:**

Many people have commented on our natural pictures, most saying how pleasing they are, or often noticing how well we have achieved our goal of avoiding sexist advertising while showing how normal and pleasant naturalness can be. A very few think we are trying to use sex appeal to promote our products, but then quite correctly note that instead of that they actually distract attention from the products. The fact is that we wish to promote healthy naturalness, to show our disapproval of the mass of sex reward type advertising, and to make a generally pleasing-to-read brochure. It is true the unusualness of this approach does distract attention from our products (maybe that is why so many write to ask questions already answered in the brochure), but our products can stand the competition. Before you buy ours we want you to fully understand what you are getting; study all other gear available; make careful comparisons on identical basis, so you'll know for sure what you're getting, and will be happy with your choice years later. A bit of distraction in the brochure, which will bring you back to study it some more, can thus be helpful.

We welcome any suggestions for improving the future brochures, or products. We'd especially appreciate getting pictures of owners using our gear, either prints or slides, to use in local display or possibly with your permission, in future brochures, or just to see our gear in use and the people who use it.

One of the major benefits we derive from this business is meeting the most interesting people and hearing of their experiences, either in person or by mail. From these contacts with our friendly customers and from being among backpackers in the mountains I have become convinced that backpackers are about the friendliest and most honest and sincere people in the world, and I feel highly honored to be accepted among them.

Forward:

Stephenson's is a small family-home operated business. It started as a simple do-it-yourself project to get better mountaineering gear, and slowly expanded (mostly thru word-of-mouth advertising by customers) into a full time business spread over 16 different homes, with about 32 various full and part time workers.

This year, so you can feel a little closer affinity with those who have made, or will make your gear, we decided to include a picture of the whole gang. (This was also a great excuse to get everyone together for a New Years Party!) Look at us, and you'll notice we're all just happy human beings, no better nor worse than others. We would like to be able to tell you, as other manufacturers tell you in their catalogs, they're perfect, people who do flawless work, better than anyone else. But, you, and we know that is not likely, and we simply try to do our best, in a working system we think encourages us all to do our best, but make no claim to perfection. But, we can assure you that if we do make a mistake, we will correct it as quickly as possible.

Several people are involved in parts preparation and finishing, but all the sewing on each item is done by one individual seamstress working in her own home. When she is satisfied it is correct, as good as she can do, a bit of craftsmanship she is proud of, she sews her name label on it. She thus gets the satisfaction of doing a complete, quality job (and frequently the pleasure of hearing from customers about how well the gear she produced has performed), and you, as a customer, get the assurance that a dedicated, capable individual has done her best to produce equipment for you, which you can be proud of owning.

This catalog is considerably different from most. We have found that people really want to understand how and why their equipment works, how it evolved, and how they can get the most out of it. Such information published in our previous catalogs often resulted in many more questions, which took many hours of individual letter writing to answer. Since those answers are often equally interesting to others, we decided to expand this catalog to include the information most of them sought. It is difficult to break up the information under specific subjects, since they all tend to be intertwined. Thus you'll find us often repeating, or straying from the main subject, but, hopefully, always informative and helpful. Blank pages are included for you to add your own notes, or for us to write in answers to specific questions you may have asked which are not covered elsewhere. We intend to keep this same basic catalog for many years, with supplemental sheets for new products, changes, or prices issued as the need arises. If you are interested in our gear at all, please save this basic catalog. New price and information sheets will be sent to those on our mailing list, whenever required.

If you order from this catalog after 1974, without reference to later price sheets, you will be notified as soon as possible if inflation and cost increases have led to price increase.

We will not give out names or addresses of other customers, unless they have specially asked us to do so. So please do not ask for such information in order to see our gear and get their opinion on it. I'm sure you wouldn't want strangers calling on you to ask you how such and such piece of gear works. We feel we have a far greater obligation to protect the good person who has already purchased our equipment, than to make it easier for the undecided person who is essentially saying "I don't believe you, so lead me to someone more believable". — We understand how all the grossly false advertising tend to make a skeptic out of everyone. That is why we present complete technical descriptions and explanations for our gear, so you can clearly and completely evaluate it, without relying on our say so. The few testimonials we've copied here, out of hundreds we've received, are also intended to give you a sample of what customers have said after using our gear, in case you cannot understand the technical data we've presented.

When you buy our gear, we want you to be happy with that selection, always. There is nothing so disheartening as to discover something you'd rather have the day after you made an expensive purchase. We therefore encourage you to compare all other makes — Be sure you thoroughly understand the real reasons for design features (ie — Is it just a copy of someone else, or does it have functional advantage, or is it simply a cost saving design). One easy way you can compare most well made equipment (But not that which is only sold direct by the manufacturer, such as ours), is to obtain a catalog from Eastern Mountain Sports, 1041 Commonwealth, Boston, Ma. 02215. Theirs is one of the most complete catalogs of good equipment available for dealer sales. Altho I feel they have been guilty of quoting misinformation, taken directly from catalogs of their suppliers, I do believe they have tried to be as honest, fair, and informative as they know how, and I can highly recommend them for all the other bits of equipment we do not supply.

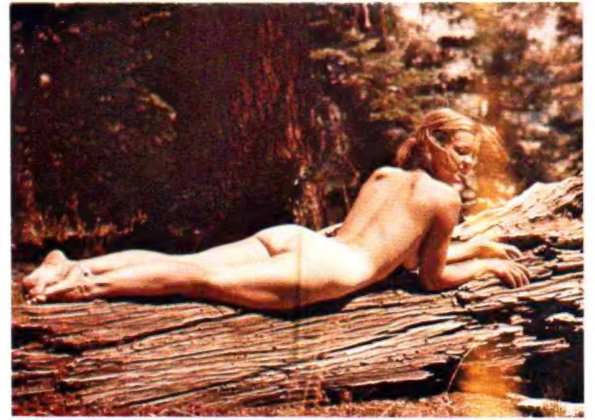
Another good source for cheap equipment, altho not a reliable source for good information, is Recreational Equipment Co., in Seattle. Altho some quality equipment is offered, it appears that the basic reason for forming this cooperative company, to get low priced equipment, is still their basic reason for existing, and has an overpowering influence on things they make, or have made just for them.



Rae
Linda
Barbara

George
Rita
Janet

Sharon



Mountain Wildlife



Rick
Erica
Monica

Laura
Jack
Beverly

Eric
Lisa
Andy

Bill



Stephenson Spinnaker



Richard
Pat

Fauna
Joan

Rosa
Danny

Buela
Carlene



Our Indoor Hot Tub



Early Hot Tub

ORDERING

You may use the enclosed order blank, or any plain sheet of paper to list your order. Please give *complete* information on each item ordered, including color choices both for the item and for the carrying sack, if it is a tent or sleeping bag. For sleeping bags, double check the girth and height measurements. If you are ordering extra length, be sure to state your reasons, so there will not be a long delay while we write to find out if it is in error, or intentional.

For gloves and mitts, please put a tracing of your hand on the order. For ponchos, include hat size, or measure the circumference of your head just above the eyes, and include that dimension.

To help us spot doubtful dimensions, include your height and weight.

If you feel you must include a letter of explanation of why you're buying what, and the various trade offs you made in arriving at your conclusions, plus any other questions, fine. But, *please list* your actual order, *completely*, on a separate sheet. (I'll guarantee you that if you start out a paragraph saying blue is your favorite color, but then go into a long explanation of why you want a yellow tent, but don't separately list it as such, you'll end up with a blue tent!).

Remember, tent and bag carrying sacks come in many colors. You can select the bag, or tent color you want, and still have it match your pack (almost) by specifying sack color differently.

Do not order something from a previous catalog, if it is not included in current one, without first inquiring about availability and price.

If you have particular trip dates you'd like equipment for, *please* list them. We are likely to get far behind on production, particularly on odd size or special option items, but will do our best to make deliveries for most important trips, as fairly as possible. I'm sure you can appreciate the problems we'd have if you ordered, stating simply "need by July 10", while someone else ordered the next day stating "leaving on 2 month Alaskan expedition July 10", and we found we could deliver one by July 10 and the other by July 11. But, if you'd said "would like in time for July 13 weekend outing and 2 week vacation starting July 27," the choice would be clear, and everyone would be happy. If you feel time may be short, please list acceptable alternate equipment choices. We will only send 2nd or 3rd choices if it is impossible for us to deliver your first choice by your specified due date, unless you instruct otherwise.

Please note: This is a mail order business. We do *not* accept any orders by telephone. You may call us, if it is essential, to get ordering information, between the hours of 9 a.m. to 8 p.m. Pacific time (*Please* remember the time shift from other areas), at 213-346-1375. This is a private family phone, and we do not maintain regular working hours, a show room, or secretary to answer the phone. On the average you'll have about a 50% chance of catching someone who can answer your questions. Please state what you want and if a return call is necessary, give name, phone number, type of information you need, and hours to return call. We will return calls collect only.

Do not send orders, or money, by telegram. The average first class letter takes 3 to 4 days, air mail 2 days, telegram 5 to 8 days. The telegram may come to the local office in one day, but then they put it in the regular local mail, apparently taking another day or two to get in the mail and several days for delivery. Your address is *not* included in the telegram unless it is part of the message. We have received telegram orders which we had to just wait until the sender got impatient enough to write, or telephone, so we could find out where to ship!

Please include a full, *descriptive* street address, not a post office box number, so we can ship by United Parcel (faster and safer). If no one is normally home during the day, give alternate shipping address to a friend who is home, or include your telephone number so United Parcel can make delivery arrangements. If no one is home during the day, and you prefer to pick it up at the post office, please clearly state "post office delivery only". If you must move after placing an order, but before receiving it, *please notify us*.

Please order well in advance of your needs, and preferably during our slackest winter months. In the past the flood of orders during spring and summer resulted in delivery delay of from 2 to 10 weeks. If you have an urgent due date, please state it with reasons for it. We will try to shift deliveries to suit, but normally must insist on delivering in the sequence orders are received. Personal checks are acceptable but there is normally delay to allow it to clear the bank. If you want to insure fastest delivery, send cashiers check or money order.

All items sold are guaranteed to be as specified. If you have any problem, or find any defects we will correct them at any time. If after receiving an item you decide you'd really like a different model, size, color, etc., you may return it with any price difference and return postage for the exchange.

DISCOUNTS: Our prices are essentially the same as we would have to get if we sold to dealers. We get frequent requests for discounts, generally because they belong to some special group, or are planning some special trip they can't really afford. To us, people are all the same, no matter what their group affiliation or trip plans, and thus the price is the same to all. Our products are good enough to be recommended by users because they work, not because their testimony was purchased by a discount. We do not have to give our gear away to get it used on rugged trips or expeditions just to claim we're "expedition outfitters."

We have very limited production capability and thus have elected to make only items which are so clearly superior to any others available that we will be filling a unique need, not merely competing with others with the same products. In order to keep prices reasonable without limiting quality of materials used or workmanship, we have to sell direct only, since any dealer markup has to be added to our price.

NO SWEAT SHIRT — A cure for the breathability myth:

People tend to be quite irrational, seeking the simple, obvious, first things that come to mind, as solutions to their problems. The breathability myth is one of those universally accepted, "obvious", but completely wrong solutions to common problems. People observed that the insulation in their sleeping bags, and clothes, got wet even when not exposed to an outside source of water. It was correctly noted that the way to allow this water to dry out was to use porous fabric on the outer surface. It was also correctly observed that the water came from the occupant. Unfortunately though, the perpetrators of the breathability myth did not understand *how* or *why* that water got from the occupant to the insulation. Instead of trying the obvious thing of putting a water proof barrier between the water source (the occupant) and the insulation, as they had done for years on the other side (ie—rain coats to keep out rain), they made the completely unwarranted and false assumption that a person's skin continually leaks water, which must be rapidly evaporated to keep one dry and warm! These people knew they were cold when wet, but never learned the most elementary facts of physics, so didn't know that it was the *evaporation* of water that made them cold, not simply being wet. Thus, they did all they could to insure rapid evaporation of any water from their skin, and rapid transfer of that water vapor out into their insulation, where it would condense, soak their insulation, and thus "justify" the need for porous fabric to dry it out!

Back in the 1950's I found that wrapping up in a poncho inside my sleeping bag made me much warmer. I had read about this in an old camping book (published in the 30's, I believe). To me, an engineer, the reason why it worked was rather obvious. It was nothing more than a small scale application of the standard way to insulate and heat homes in cold climates: you put a vapor barrier over the inside of your insulation, so inside humidity cannot get out to the cold side of the insulation where it could condense (on wood sided homes that condensation would soak the wood, and later the sun would evaporate the water and steam the paint right off the wood!). You then put a humidifier in the home, along with the heater, to raise humidity to a more comfortable level, which would stop evaporative chilling of your skin, so you could be comfortable at much lower temperatures. (In the 1900 radiators in our old house, the humidifiers were simply long skinny water trays which slipped into the center openings of the radiators). Applied to a sleeping bag, the poncho was the vapor barrier (now we use specially coated fabric in the bag), and the occupant is the heater-humidifier. This worked so well that I decided to build it into my sleeping bag, altho it was many years before I found an acceptable vapor barrier fabric to use.

My next most common problem was cold feet and hands, and wet boots. Obviously the problem was the same — evaporation from feet would chill feet, humidity would then condense on cold boot, allowing more evaporation and chilling of feet. Insensible sweating would continue to provide moisture till condensed water on boots would soak socks and wick back to feet. Initially I found that saran wrap around feet (or over very thin nylon socks — plastic directly on feet feels funny) would solve the problem, keeping feet warm and dry. Saran wrap is the very best vapor barrier, but it is a bit stiff and awkward, thus when polyethylene baggies were introduced (about 1960??) we switched to them. Just slip your foot in a baggie, fold over excess, and put a thick sock over it. Hands seemed to be a more difficult problem, but now, a wide variety of gloves are available, for kitchen wear or chemical use, made out of polyethylene, rubber, or vinyls. Since your hands are kept very moist, to keep the skin flexible, the effect of such vapor insulation is most noticeable on them.

When we finally got a suitable vapor barrier fabric for use in the sleeping bag, I decided to also try it in clothing. As with most ideas, it took years (and a couple of extremely cold skiing days) to get around to it. The shirt was made in 1969, and ski pants shortly after. The results were quite dramatic. It replaced the thermal knit long johns, Norwegian net underwear and two bulky knit sweaters, which had been standard ski wear under my parka, and I was warmer than ever before. The most amazing part though, was I no longer got soaked with sweat, and did not have to change or wash out all my ski clothes after each day of skiing! The vapor barrier was doing its job of blocking unwanted evaporation and cooling, but was also acting as an instant sensible sweat detector. As soon as I got slightly overheated, and started to sweat, I'd feel wet, so would open my jacket and cool off. Previously, I would ski a whole run, get overheated and soak all clothes with sweat, but wouldn't notice it till sick from overheat. Then I'd get in the chair lift and freeze from evaporating sweat! Frequent stops were required to warm up and quench a terrible thirst (the bota was generally empty in a half day or less!). With the vapor barrier clothing I stayed warm, dry, and not thirsty, often still having half a bota of wine left at the end of a day (this is the one problem with vapor barrier clothing — you have to remember to drink your wine (or only half fill your bota), or risk seriously damaging your wine drinking reputation!).

In 1973 we finally managed to get some of the vapor barrier shirts produced, by a local company which makes sport shirts, and started selling them with the descriptive title "No Sweat Shirt". Due to doubts about getting them made, kits were also produced. Kit instructions were simply standard shirt pattern instructions, which many people find difficult to follow. The cost of cutting and packaging kits was far higher than expected. Thus, if kits were continued the price would rise and the advantage of making it yourself would disappear. Basically, all this says is what we've always known: A person who is very experienced and familiar with making an item, working with a high speed production sewing machine, can sew up an item far cheaper than a person making it for the first time, trying to follow written instructions, using a slow home machine. Thus the kit was discontinued.

The first No Sweat Shirts were made much like a dress shirt, only reversible, with velcro tabs instead of buttons. Notice though, that some of the features of a dress shirt are not needed, nor desirable (such as cuffs, double yokes, pointed collar, hemmed lower edge), and being reversible is not needed. The vapor barrier coating was aluminized, to reduce emissivity or get reflectivity of radiant heat. The reflectivity was initially utilized by wearing the aluminum side facing in. That does work somewhat (an aluminized surface, faced in, is warmer than a non aluminized surface), but, since the shirt is practically opaque to radiant heat, and is almost at skin temperature, it becomes the primary radiant heat loss surface. Thus, facing the aluminum out, to get low emissivity keeps you slightly warmer. The difference is very slight, but enough to rule out the need to ever wear the shirt with aluminum side in. You'll also find the fabric side is far more comfortable against you than the coated aluminum side.

The No Sweat Shirt can also be used as a light wind breaker shirt. The aluminum surface will reflect sun yet reduce radiant heat loss, so you will not get overheated from the sun or chilled in the shade. To make it more useful as a wind breaker we replaced the velcro tab front closure with a light nylon coil zipper, and the dress shirt cuffs with elastic closed cuffs. Since coated fabric will not ravel, the bottom hem was eliminated to get rid of that uncomfortable bump when tucked into pants.

It is frequently suggested that the No Sweat Shirt could also be used as a rain jacket. This is true, but that is one of those contradictory multiple uses: When wearing a rain jacket it is most desirable to wear the No Sweat Shirt as an inside vapor barrier, and thus prevent condensation on the inside of the rain jacket. Obviously you can't wear it both places at once, so take a separate rain jacket (or, poncho, which is better for most backpacking). If you do get surprised by a rain storm, you have your No Sweat Shirt, and no rain jacket, then you'll probably be better off wearing it as a rain jacket (altho the seams will leak, unless you've sealed them).

What about vapor barrier pants? They work great to keep your legs warm, but, since your legs will produce a lot of excess heat when active, you must have means for ventilating them. This is quite simple in my ski pants, where the vapor barrier liner is built into the pants, and a single 2 way zipper on each leg provides instant ventilation control. If you wear vapor barrier inner pants under regular pants, you have to add a side zipper to your outer pants, for access to liner zippers. We are not yet in a position to produce vapor barrier inner pants, or complete pants with liners built in. You can buy the aluminized vapor barrier fabric, which you can use to line your present pants, or make liners.

We are presently producing the No Sweat Shirt in yellow or green fabric, with aluminum coating on outside. Since the color is not normally seen, it makes little or no difference. Altho not specifically designed for reversibility, it can still be worn with either side out tho, so please specify the color you prefer. We may eventually produce them in various other colors, so feel free to specify any color you desire as long as you also specify the second or third choice you'll accept, which includes yellow or green. (This is not quite as dogmatic as the early color choice on Fords, "You can have any color you want, as long as it is black").

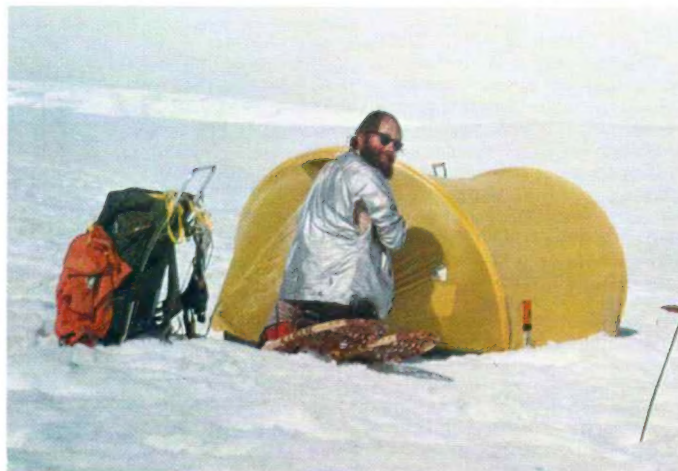
Sizes: We are making shirts in 4 basic sizes, listed below:

You can comfortably wear a shirt which is too large, but not one which is too small. Thus, select the size which is as large, or larger than you need on each dimension. These sizes correspond very well with the common sizes of small, medium, larger, and extra large. If you are much smaller, simply buy a small size and tuck out the excess. If you are too large for extra large, please give full dimensions (or just send us a shirt that fits — we'll return it), include \$4 extra for custom cutting and handling, and expect to wait a few extra weeks.

No Sweat Shirt Prices:

Chest	Neck	Arm		
34	14½	33	Small	\$16.00
39	15½	34	Medium	16.50
44	16½	35	Large	17.00
49	18	36	X Large	17.50

For custom sizing, add \$4. State color: Yellow or Green.



No Sweat on McKinley



Bottom of Bag Alone for Lounging Pad



Nothing Is Better Than a Stephenson No-Sweat Shirt

WARMLITE SLEEPING BAGS:

UNIQUE DESIGN FEATURES

The Stephenson Warmlite bag achieves maximum warmth and comfort with least weight through use of superior materials and design features found in no other bags. The cover is constructed of a specially woven and finished ripstop nylon which combines high strength and durability far in excess of requirements.

Zipper are all nylon, thus eliminating problems of corrosion and jamming of metal zippers, while further reducing weight. The fill is the finest, highest loft, Polish goose down, carefully selected for maximum loft, and treated to maintain resiliency and prevent mildew. The shell is made to uniform thickness with no cold spots and no shifting of the down, with differential cut (outside shell is larger than inner shell by the amount of down loft, thus assuring that motion within the bag, and protruding elbows and knees will not compress the down.) This construction is more expensive than others, but is necessary for achieving most uniform insulation with a minimum weight of down and fabric.

Unique features found only in WARMLITE bags are: 1. The side opening closed with double zippers; one on inside surface and one on outside. This assures full insulation at the zipper, which other makes unsuccessfully attempt to do with a down filled flap, and maintains the full advantages of the differential cut; 2. Integral foam pad to solve roll off and cold bottom problems; 3 reflective fabrics to eliminate radiant heat loss; 4. Vapor barrier interior to stop evaporative heat loss, prevent condensation in the down and to prevent sweat damage of down; 5. Zipper closed parka-like hood; 6. Multi-layer top for all temperature use; 7. A down filled collar to stop neck drafts (which is optionally available on one other make).

TRIPLE BAG TECHNICAL DETAILS!

With down insulation in a bag, you can expect acceptable comfort for sleep over a maximum temperature range of about 30 deg. F. With reflective and evaporative insulation added, you can still only tolerate about a 45 deg. range, and won't be too happy at the limits. To be comfortable from room temperature to -50 deg. would thus require 3 separate bags. For comfort over the more commonly found range from room temperature to 10 deg. would require 2 bags. We have reduced the 3 bags down to a bit less than 1½ bags with our Triple Bag, simply by providing one bottom, which is similar in requirements for all temperature ranges with 2 fully removable tops.

The inner top is twice as thick as the outer top. Thus, with both tops you have maximum insulation, with inner top alone you have ⅔ of maximum, and with outer top you have ⅓ of the maximum insulation.

Weights: Weights listed are for most common size, 6'1" height. For shorter heights, subtract about 1 ounce per inch, from total.

Weights in ounces	64 in. girth	60 in. girth	56 in. girth	70 in. girth
Typical Height	6'1"	5'9"	5'6"	6'4"
Outer Top	16	14.8	13.8	18
Inner Top	28	26	24.2	31
Bottom	25	24	23	26
2" Foam Pad	27	25.5	24	30
Total	96 (6#)	90.3 (5.6#)	85.0 (5.3#)	105 (6.6#)

These weights represent the averages for bags presently being produced. They can vary somewhat due to variations in fabric weight, variations in coating weight on interior, and possible variations in down fill weight (refer to section on down).

We normally produce the bags in above girths and lengths to suit customer's height. To determine your girth requirements, measure according to diagram below. Be sure elbows are at side, forearms are straight and parallel to each other (i.e., wrists should be as far apart as elbows). Fists should turn in loosely. Normal maximum height expected for each girth is: 5 ft. 6 in. for 56 in. girth, 5 ft. 10 in. for 60 in. girth, 6 ft. 4 in. for 64 in. girth. We will make the girth you request, but will not exchange for a larger girth bag if you've ordered a bag for greater height than listed above, for the girth ordered.

We will make bags with any girth you desire either less than 56 in. or more than 70 in. Price will be \$5 + \$2.50 X Girth.

If you order a special girth size, please also specify your width, at elbows, so we can determine required pad width, and see if the ordered girth is reasonable. If ordering for a child, you must make the estimate of growth to determine size to order.

For small children we suggest you order the child's foam pad unit, which uses the unneeded tops of your triple bags. Preferably this should be ordered with your bags, so we can match up zipper lengths correctly. This unit is simply a covered foam pad, with porous bottom and vapor barrier top, sized to width and length you specify, with double zippers to match zippers on your triple tops. In warm weather, when you use thin tops on your bags, put one thick top on child's pad. In colder weather, when you use the thick top on your bag, put both thin tops on child's pad. Obviously this arrangement requires two regular triple bags for one child's pad, and is not useable in extreme cold where both tops are required in your triple bag, but children are seldom taken camping in such cold anyway.

COLD NECK DRAFTS ELIMINATED

To block all cold drafts from the neck opening, a down filled collar is provided just above shoulder level, which snugly closes the top at the neck. For windy weather, the hood is closed with zippers over the shoulder, creating a form fitting hood similar to a parka hood. An additional draw cord about the face can be used to adjust the opening to any desired size.

With hood ¾ closed you can sleep in any position and cover your head. This is especially nice for us who sleep mostly on our stomach.

FOAM BOTTOMS

The built in foam bottom solves many of the problems of the old style bags which required a separate foam pad unit.

1. It greatly reduces rolling off the pad, and makes it far easier to roll back on if that does occur. This permits a smaller, lighter, form fitting pad.

2. Makes it easy to turn over in the bag, without getting tangled or exposing a crushed, thin, cold bottom side of the bag.

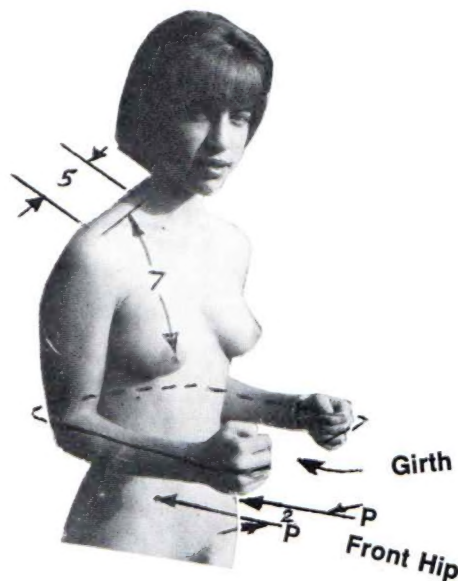
3. Eliminates the cold line along edge of pad.

4. Saves about ⅓ the fill weight and cost, plus weight and cost of separate covering for pad.

5. Simplifies packing. The whole bag can be rolled and put in one carry sack with same effort it takes to roll and pack a separate pad.

6. Reduces packed bulk and simplifies carrying on a back pack. The reduced foam size and reduced amount of down and fabric means less total bulk, and you only have one unit to attach to your pack.

There are many various types of foams available, and similarity of name prefix: poly-, tend to confuse people. Poly- simply means the material is made of large molecules having many of the basic chemical units joined together. Thus polyether urethane has long chain molecules made up of ether molecules, with chains linked with urethane type bonds. Polyethylene is simply long chains of ethylene molecules. We have tested many types of foams, and continue to test them as new ones appear. Back in the 1950's, ensolite (trade name for a poly vinyl type of closed cell foam) was the best insulator for use under load, altho it was bulky, too hard for comfort, and did not last very long. During the 1960's, polyether urethane foams were developed, and improved to the point where they gave much better insulation, with less packed bulk, than an equal weight of ensolite, and provided good comfort and durability as well. We presently use the best polyether urethane foam we can get. A recent development (about 1969-70) has been closed cell cross linked polyethylene, with physical and insulating properties similar to ensolite, but at much lower weight. We do not use it because of its lack of comfort and greater packed bulk, plus tendency to become excessively stiff in cold weather. But, switching to a ½" piece of the polyethylene foam (which is easily done with our bags) will save a few ounces.



Pack and Bag Measurements

WARMLITE TRIPLE BAG PRICES

Girth	Normal max. height	Weight	Price
56"	5' 6"	5 lb.	\$140
60"	5' 9"	5½ lb.	\$150
64"	6' 8"	6 lb.	\$160
70"	7'	7 lb.	\$175

More than 70", less than 56", price = (\$250 x girth) + \$5.00.



Triple Bag, Hood Open, Collar Closed George



Triple Bag, Hood Closed

MATERIALS:

All of the sleeping bag fabric is 1.2 oz./sq.yd. high tenacity ripstop nylon, which we have used since 1958 with no signs of wear or tear. (Lighter weight fabric can be made, and is more than durable enough, but, so far, we have not been able to get it down proof).

The inside surface of the bottom and thick top are coated with a special vapor barrier material. The coating on inner top surface is aluminum pigmented to greatly reduce radiant heat loss. This provides several very significant advantages over old bags with porous interiors. The coated surfaces face away from you, so all you feel is the nylon fabric side.

1. No water vapor can get into the down or foam, thus no condensation can occur and your insulation always stays completely dry. The average porous fabric bag will pick up 1½ to 3 lbs. of water from condensation on a typical cold night, and will take 4 to 12 hrs. to dry out on a warm dry day IF left unpacked. Porous fabric bags will suffer total collapse from excess water in a week to 10 days of typical winter camping, unless exceptionally good drying conditions prevail. Many expeditions and winter climb failures, and deaths, can be directly attributed to the collapse of down insulation from condensation. With our vapor barrier interior, any insulation will maintain full effectiveness indefinitely.

2. Interior relative humidity will rise rapidly from the typical 5% to 15% of a porous bag to a more comfortable level of 60% to 90%. This will greatly reduce undesirable sweating and water loss. The vapor barrier effectiveness depends on how tightly you have the bag closed around your neck, since water vapor can diffuse rapidly thru any opening. You can thus extend the low temperature range about 20 deg. lower than possible with an equal thickness porous fabric bag, yet have the same higher temperature limit by ventilating at neck to allow vapor escape.

4. Sensible (liquid, observable, feelable) sweat cannot get into down or foam. In weather that is too warm for the insulation thickness you are using, you will eventually get too hot, resulting in sensible sweating which will soak you and your bag. When this wakes you, you will attempt to cool, and dry yourself and bag by opening it. With vapor barrier-waterproof interior, all the liquid sweat is kept right on the surface, where it will rapidly dry off, leaving you and your bag dry and cooled. With the old porous fabric bags, much of the sweat wicks into the down (carrying with it body oils, salt, odors and dirt, to damage the down), and cannot be quickly dried out, thus leaving you with a clammy, sticky wet bag.

5. Accumulated dirt on inner surface can be quickly and easily washed off without washing the whole bag. Practically all the dirt which gets on a bag or in its insulation comes from the user and gets on inside surface. The waterproofness of our bags allows this dirt to be quickly washed off with damp-soapy cloth, without subjecting the whole bag to down damaging washing or dry cleaning.

6. Provides absolute down proofness on surface against you. Most "down proof" fabrics will still allow small broken fibers of down thru the pores. As a bag gets older, fabric will loosen, and even more of these broken fibers will escape. This is actually good, since it purges the bag of useless extra weight. But, if it occurs on the inner surface next to you, and you happen to be wearing clothes in the bag, you could come out covered with those fine broken particles, which is unsightly and annoying. This is of no major significance, but it cannot occur with sealed interior fabric.

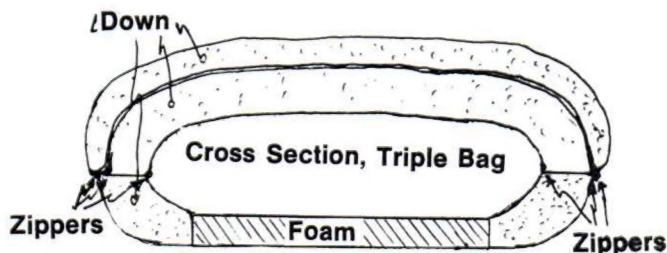
3. Prevents undesirable water loss, the midnight thirst, dehydration and impaired blood circulation. This also reduces water intake, which is especially important when all water must be obtained by melting snow or ice. A major cause of frost bite on cold high altitude climbs is the combination of dehydration and thicker blood due to altitude conditioning which increases red blood cells, thus reducing circulation to hands and feet. For maximum protection from frost bite, one should extend the vapor barrier protection to daytime clothing, using our no sweat shirt, and vapor barrier on feet (baggie or saran wrap) and hands (plastic or rubber gloves). This could also be applied to legs but, due to high heat output in legs, provision must be made for ventilation and controlled cooling when active.

The outer fabric is tightly woven and heat shrunk to provide wind and down proofness. Aluminum is vapor deposited on the surface which faces the down, to both reflect heat back towards you, and to reduce emission of radiant heat from the bag itself. There are good arguments for facing the aluminized reflective surface towards you, or away from you, but, since the aluminum will wear off rapidly if exposed, the only practical way to use it is to face it towards the down, so it will not wear off. This orientation also offers two emotional advantages: 1. The fabric color, not aluminum surface shows, and 2. Those people who have unearthed and believe the old, fraudulent, anti-aluminum scare stories circulated when aluminum pans were first introduced, to discredit aluminum, need not worry about aluminum touching them!

A light water repellent finish is put on all fabric. This will keep dew from wetting the bag, but will not keep out rain, or ground water. As for any other bag, a waterproof ground sheet is required to keep bottom of bag dry and clean. Your tent floor, poncho, or light plastic sheet will suffice.

Baffles are the same high strength ripstop nylon, only not heat set, so it is softer, slightly stronger, and down clings to it.

All fabric parts are hot cut individually, leaving a sealed, fused edge which cannot unravel.



Lory on Stomach, Hood Closed

ZIPPERS: Are all nylon offset coil construction, which makes them lighter, smoother operating, stronger and more snag resistant than older tooth zippers, and leaves only smooth tape exposed on the inside against the occupant.

Sides are closed with twin zippers — one on outer surface and one on inner surface, with panel between assuring the zippers will not degrade differential cut effectiveness or cause a cold line. This design has been used exclusively on our Warmite bags since 1962, and is still the only one which totally prevents a cold line along the zipper.

Side zippers are identical on each side and extend 72" below the neck. A separate foot zipper pair extends around the foot from ends of side zippers, thus allowing removal of either layer, or to open foot independently. You can zip together with another similar bag on either side, or can zip several together. When using the bag with both tops you can open one top on one side, the other on opposite, and let the bag expand to 1½ times normal girth to allow you to dress easily in the bag. Or, in summer you can zip the two opposite edges of tops together, thus forming a bag for two having 101" girth (our normal dual bag had 108" girth.) For this you'll need an extra pad. OR, you can remove both tops and zip them together to form a thick quilt for your bed, with one side thicker than the other. The bag bottom used by itself makes a very comfy lounging pad.

We'll make the bags to any height you wish. The standard 72" side zips just reach the bottom corners on a 5' 8" bag. If you zip a shorter bag to a standard 5' 8" or taller bag the neck position shifts towards foot of the longer bag. This shift can be avoided if the taller bag is ordered with the short bag, in which case side zips will be made the same length on both.

When zipping two bags together it is only necessary to join the inner two zippers, which takes less than a minute. Lying loose the pads will be separated by about 8". The one who gets into bag last can push the two pads together to eliminate that gap. Or, you can take along an extra 1½ x 8" strip of foam to lay between the bags, underneath, and thus have a wider more comfortable pad.

The versatility and easy zip together feature of our bags eliminate the need for the earlier dual bags. It is quicker and easier to separate and separately pack two bags than it was to remove one top and one pad for separate packing of a dual bag. If you ALWAYS intend to use the bags together, then order your bags with about 8% less girth than normal. But remember, if you then use the bags separately they will be VERY snug.

GOOSE DOWN

DOWN: Only the very best live picked mature Polish goose down is used in Warmite bags. Live picking of older birds gives the most durable high loft down possible, and assures constant supply of down since the birds need not be killed. This down costs nearly twice the price of lower grade downs referred to as prime, grade AAA, northern goose down (which accurately describes down from any bird grown north of the equator). It is of interest to note that more mature duck down is becoming available, with a loft as high, or higher than these other common goose downs. A comparison of lofts gave the following results:

Mature L.P. Goose, free loft.....	1150	Cu. in./oz. loaded	825
100% Northern Goose, free loft	800	"	500
Mature Duck, free loft.....	815	"	550
Regular Duck, free loft.....	580	"	380
Dacron — new type, free loft....	225	"	200
Dacron — old type, free loft.....	150	"	140
Polyether foam, free loft.....	110	"	110

There is probably more misinformation about goose down, and the use of down (baffle systems), put out in sales catalogs and magazine articles, than on any other subject. We do not know if this is due to ignorance, or intentional efforts to mislead the potential customer, but it is rather obvious from the questions we receive that they are very successful in misleading people. For some odd reason, many people are more likely to believe the grandiose claims such as "only our brand is real quality down", with no supporting technical data, than the detailed explanations and factual information provided by some honest suppliers. If you're that type, do not bother to read the rest of this section. Instead, simply compare insulation thickness per pound of total weight, and don't worry about how it is achieved. But, if you are concerned with how that insulation thickness can be achieved, with minimum weight, then read on.

Down is a soft fluffy material which grows on ducks and geese to keep them warm. Each down particle has many very fine fibers fastened to a center support. Generally, longer and stiffer fine fibers result in greater loft, resiliency and durability. The length and stiffness of the fibers is mostly a function of the bird type, size and age, and slightly influenced by diet and climate. The large white geese raised in central Europe for meat, happen to produce the best down for lightweight insulation. The small ducks and geese raised in Asia happen to produce small, soft down which is not much better than the new synthetics, Polargard and Fibertil II, but is used in bags from Asia and New Zealand. Between these extremes are many variations in quality with the biggest differences in domestic and European down being due to the age of the bird.

The quality of down from any one type of bird varies greatly with the age of the bird when the down is collected. Down from young birds is very soft, but rather low in resiliency and loft. Part of the low loft per pound is due to the large amount of very small feathers, which cannot be separated from the down. This type of down is excellent for garments (such as vests, parkas, and mitts), and thus is often referred to as garment grade down. For garments, the extra weight is of little significance due to the small amount used, and lack of resiliency is a negligible problem since garments are seldom packed as tightly as sleeping bags. At least one company, which used to make top quality sleeping bags, but greatly degraded their design and materials to meet a lower priced market, now claims, for some unknown reason, to use all garment grade down in their bags. Possibly the rapidly increasing price of down, or just the soft feel, influenced them.

Most ducks and geese are raised for meat, and the maximum yield of meat per \$ cost is achieved with young, immature birds. In the past, down was simply a by-product which had little influence on how the birds were raised. In central Europe, goose liver has been considered a delicacy for which people will pay a very high price. A large liver is obtained from old birds, overfed, and chilled by plucking their down. Thus the old farm technique of regularly plucking the flock of geese to obtain down for the family's quilts, clothes, and pillows, is now a commercial technique for increasing liver yield. The live plucked down turns out to be the very best down available. It is cleaner, pure down, with an absolute minimum of small feathers and broken fibers, and, taken from large mature birds, has the largest, highest loft, most resilient fibers. The down obtained when the bird is finally killed is also generally very high loft and resilient. But since it is stripped off wet with the feathers, then washed, dried, and air separated, it will have more feathers and broken fibers in it, resulting in more weight for a given loft.

In the recent past, most down went into pillows, and it was relatively easy to get pure live picked European goose down for sleeping bag use, altho the high price influenced most manufacturers to use lower grades, or mixtures. As the demand for light weight sleeping bags increased, the price for down increased, having rather funny results. The price of the top quality down went so high that only a couple of manufacturers continued to use it, while others switched to the cheaper, more available garment and pillow downs. The resulting price increase has greatly reduced production and sale of down pillows, but has also had some influence on increasing the quality of down. Birds are allowed to mature more in order to get higher quality down and a higher price. Thus, looking at the sleeping bag market as a whole, we find the increase in demand has resulted in a decrease in quality of the average down used in bags, ie, lower quality pillow and garment grades switched to bags), although the overall quality of down produced is supposedly improving. Most manufacturers of quality down bags have been very upset over the lower quality and higher price of down available to them. We have used only the live picked Polish goose down, and have paid greatly increased prices to do so. But, some suppliers now absolutely refuse to sell that, preferring to mix the higher grade down with low grade down to obtain an adequate quantity of acceptable medium grade down, and others are trying to get us to accept that lower grade mix. Eventually we may be forced that way, but we can assure you we will continue to use the highest quality down we can buy, to get minimum weight and maximum life. If it becomes necessary to use a mix of the live picked down with lower loft wet picked down, then we will adjust down fill to maintain designed loft, and the main change will be a slight weight increase.

You may wonder what significance the variations in down quality has. One answer is quite simple: higher loft down will reduce weight of down required for a given insulation thickness, thus making a lighter weight bag. But, down weight is only part of the bag weight. It is quite silly to pay an extra \$20 for top quality down in a bag to save 4 or 5 ounces of down weight, while using 1.9 oz. or heavier nylon which increases the shell weight 12 ounces, to save \$6 in fabric cost! Other manufacturers are quite aware of this, and are thus not about to waste money on higher loft down when they could save weight for less cost. There are even some manufacturers using double quilt construction, which requires twice the weight of fabric, but, by saving labor can reduce cost. Obviously such bags will not be filled with expensive, good quality down, no matter what flowery descriptive phrases are used.

If weight was the only difference, than one could simply compare total bag weights among bags having the insulation thickness he desired, and make his selection based on how much he was willing to pay for lighter weight. But, there is one other important factor: durability. Down taken from an older, mature bird is much more durable and resilient than young down. Thus one might not object to the heavier weight of young, lower loft down, but, he might object to the relatively short life of the down. One solution to this problem, if you're trying to save money, is to buy bags filled with mature duck down, which may only have the loft of the cheaper immature goose downs, but will be more durable. In this case, the often repeated claims that goose down is better than duck down can be misleading, since that statement is only true when comparing similar grades, or similar maturity downs. The mature breeder duck down is generally better in all respects than much of the immature goose down available. Interestingly, the lowest grade of duck down and feathers that I've seen used in any domestically or European produced down bag is con-



Inside Warmlite 2 (Former 6L)



Company



Triple Bags Separate



Zipped Together



Triple Bag, Thin Top Only , Foot Open

Lory

siderably better than the best I've seen from Asia and New Zealand. But, do not be misled by that statement, since I have mostly been concerned with the higher quality bags put out by reputable firms such as North Face, Sierra Designs, Holubar, Frostline, Alpine Designs, etc., so it is quite possible there are some domestic producers using, low quality Asian down, which I'm not aware of, and, with increasing demand for bags and increasing costs for down, it is very likely that lower priced domestic bags will soon be using Asian down. Thus you're largely on your own when trying to select low cost down bags for warm weather use.

As down ages, it can deteriorate in several ways. Small fibers break off, and are thus useless. It would be nice to have the outer fabric woven with pores just large enough to allow the small broken useless fibers to escape, but not allow full down particles thru. This would constantly purge the bag of useless weight, but, could be rather annoying if it occurred on inside fabric, since the fibers would get all over you (they tend to cling to clothes). Also, it is very difficult to control fabric porosity that precisely (altho a lot of fabric we received in the fall of 1973 met those specifications almost exactly). We normally specify a far tighter fabric finish. Since our bags all use vapor barrier sealed fabric on inside surfaces, the broken fiber purging fabric is not so annoying.

Washing or drycleaning the down will remove natural softening oils, thus making the down brittle and more likely to break when packed. But, sweat, with its accompanying oils, dirt, and salt, will tend to stick fibers together, thus greatly reducing loft and insulation. It is thus better to wash the down to revive loft when it gets matted, but, far better to never let sweat get into the down, by providing a waterproof barrier between you and the down.

If you lie on the down you'll overcompress it, and likely permanently flatten it. Worse, if you slide on it, in the process of turning over, you'll roll it into string like fibers, which will never recover. (This is similar to the way thread, string, or rope is made. A bag filled with string made of down can't keep you warm!). To prevent this, you should fasten your bag down to your foam pad, thus totally preventing lying on the down on top and side which is required to keep you warm (the down in the bottom is useless anyway, so ruining it by lying on it is of no consequence).

There are some things which can be done to assure that top quality goose down will not be wasted where not needed, and thus will continue to be available for use in bags where needed. If other companies would follow our lead, and build foam pads into their bags, thus avoiding wasting down on the bottom, about 1/3 of the down could be saved. Most down clothing can be made with the new synthetics (Polar-gard or Fiberfil II), or the lowest grade duck downs, with negligible weight increase, and a vast decrease in cost. Encourage your friends to buy only synthetic fill clothing when it is adequate to do the job. Many people buy down bags just for the "prestige" of owning a



Triple Bag Showing 2 Tops

down bag. This is O.K. if they get the low quality Asian down, which is little different than dacron, in bags imported from New Zealand, Taiwan, Korea and the Philippines, but sheer waste if they buy quality domestic down bags which are too warm for their use. Do not encourage anyone to buy thicker, warmer, or higher quality bags than they need.

Down can be degraded rapidly by packing too tight, by leaving packed for long periods (especially when hot), by excessive packing and unpacking, and by washing or drycleaning. Prolong the life of your bag, and thus delay the need for replacement, by packing it only when necessary, and for as short a time as possible, and in as large a sack as possible. Always roll your bag and slip the sack over it, to assure uniform pressure on the down and minimum wrinkling of the fabric. Stuffing the bag is a fine way of assuring early sale of a replacement bag, and thus is recommended by many retailers. Stuffing thoroughly wrinkles the fabric, covering it with sharp folds and creases which reduce life. Invariably a stuffed bag has the far end packed loose while the open end is packed excessively tight, thus damaging the down. An all down bag is a bit difficult to grasp properly to roll (two people can do it better), but it is worth the trouble for greater life. The task is simplified if you'll roll your pad and bag together, then put it in one oversize sack, which also simplifies packing your backpack. Of course, on all our bags the foam is built in, so it is very simple to just roll up the bag and put in a single sack. A few people have oversize backpacks with a built in compartment for an all down bag, with provision to carry foam pad rolled separately. For those the tops of our triple bag are simply zipped off, rolled and put inside pack, and the bottom, which is mostly a covered pad, is rolled separately and slipped into a foam pad sack.

BAFFLE DESIGN

There has been a baffling amount of misinformation spread around concerning baffle design in down sleeping bags. Most of theirs appear to be based on rigid construction, using a heat conductive material (such as sheet aluminum), which repels down, for the baffles. But, in actual practice, all down baffles are constructed with soft, non-conductive fabric which the down clings to. The two functions of a baffle are to constrain the inner and outer covers from moving apart more than the down can expand, and to prevent lateral shift of the down. If the baffles allow more volume between the covers than the volume of down fill, then the down can easily fall off to the lower areas (along sides), leaving a thin, cold top.

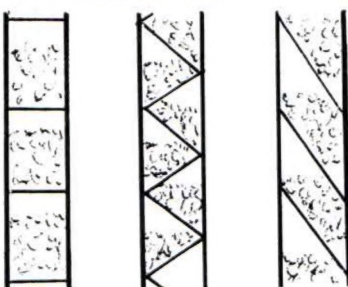
Goose down is an expandable insulator, but, like a spring, it will only expand to a certain volume. If the covers of a sleeping bag were perfectly rigid, and thus could not spread apart more than the down could expand, then the down could not shift in any direction. But, sleeping bags are made of soft fabric, which can easily spread apart. With no baffles (or with oversize baffles which do not limit fabric spread), the down will simply fall to the lowest areas, spreading fabric apart to make room, leaving the top thin and cold. If baffles are sewn in such a way that the fabric can't spread more than the fill thickness, then there will be no room for the down to fall into, so it must stay in place. Presently, there are three baffle systems which meet this requirement: quilt (sewn thru), v baffles, and vertical baffles. Quilt construction leaves lines of no insulation, and thus is only used on very crude, cheap bags, or with two quilt layers with sewn thru lines offset. The double quilt requires 2 extra fabric layers, and thus is excessively heavy. A simplification of the double quilt is the V baffle system. This is often referred to as overlap tube construction. Each section or "tube" of down formed by baffles, has a thick center and thin edges. The thin edges would be cold (like quilt construction), but it overlaps the thick section of adjacent tube, thus curing the mythical problem. Actually, the down is just a uniformly thick layer, and putting a baffle thru it on an angle does not change the thickness. It is possible that the small angle a v baffle makes with the cover could keep down out of the corner, thus leaving a void. It is more likely that down will be pushed into the corner, will stick there, then be overcompressed when bag is stretched out, thus decreasing loft. The main disadvantage of v baffle is excessive fabric weight. A vertical baffle does the required job most directly, with minimum fabric weight, and avoids the acute angles between baffle and cover, thus avoiding over compressing down caught in the corner, or voids caused by down kept out of the corner.

Obviously the space between baffles can expand. Thus, the maximum space will be greater than the rectangular space indicated by flat surfaces. The ratio of fully expanded volume to flat surface volume depends on the ratio of designed baffle depth to baffle spacing. A plot of this ratio is shown below. To achieve a given average thickness, with no down shift, the baffles must hold covers slightly closer together where sewn, and down fill must be adequate to expand covers to the fully expanded condition. — The sketches show how covers will appear when flat, in "design" position, and when fully expanded, for a typical 4" design thickness and 6" baffle space. — You can see why slant baffle bags are notorious for large down shifts, due to expansion ratio of 2.15 for the typical 6" spacing and 4" thickness. A vertical box baffle could be spaced 12.8" apart with down shift no worse than the slant baffle with 6" spacing!

You must wonder then, why so many others use slant baffles. The reasons are varied, but, the most common is simply "so and so does it,

and has so much advertizing for it, that we simply must do the same". It appears that the real reason it got started was overselling of the "overlapping tube" idea of v baffles, by Holubar. When they wanted to make a cheaper, lighter bag, they simply eliminated $\frac{1}{2}$ of the v, so they could still show "overlapping tubes", totally ignoring the fact that they lost the required cover restraint when they removed half the baffling.

A major reason for continuing with slant baffles, despite all the complaints about down shift, is ease of selling underfilled bags in the typical hanging rack. When hung from the foot, vertically, the underfill is not so obvious with slant baffles as with vertical baffles. As the sketch below shows, you can easily see light thru the unfilled areas of the underfilled vertical baffle bag, while the overlapping sections of slant or v baffle make the underfill less obvious, altho all would have similar heat loss.



If you plan to sleep standing up, possibly the slant, or v baffle would be a good idea, but not many people sleep standing up.

To detect such under filled bags, hold the bag horizontally, by one side, and gently shake it, then lay flat on floor and observe down shift by loft difference between sides. (Violent shaking can pack the down, compressing it, and thus mislead you. In use you will not shake the bag violently, but you will gently shake it.) Slant baffles being grossly under filled by design have very large down shift, and thus should always be highly undesirable. Even considerably underfilled vertical or v baffle bags will have less shift than slant baffled bags, and probably will be quite useful as long as you carefully distribute the down evenly before each use, and avoid active tossing and turning.

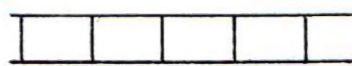
There is one exception I know of, regarding slant baffle bags. North Face (in Berkeley, Calif.) calls their bags slant baffle, when in fact, they approximate vertical baffles, since they use undersize baffles, only slightly offset, than fill to almost full expansion, resulting in vertical baffles with twisted ends. Their construction and materials are otherwise as good, or better, than most others, and thus their advertizing of slant baffles should not be taken as a disqualifying defect.

Various materials are used for baffles, for various reasons. Porus, non down proof fabrics are generally preferred, since some of the down can stick to the baffle, thus holding down in place. This is especially important in underfilled bags, and you'll notice an emphasis on net, or loose knit baffling in bags which have had problems with down shift. We have heard of net baffles tearing loose, but that was generally due to mistreatment. We simply use the same basic fabric for baffles as for covers, only in the as woven condition (not heat shrunk or pressed, and thus not down proof). It is softer and slightly stronger in that condition.

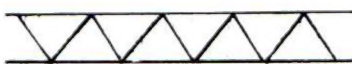
It is possible to have down restricted too much. When you pack a bag you must compress the down, and in so doing you are likely to shift the down. When the bag is unrolled, light shaking and patting will normally distribute the down properly if the tubes are not too small, or restricted by down stuck to baffles (as often is the case with close v baffles). This was apparently enough of a problem with Holubar bags to influence them to build lengthwise baffles into their "Ultimate", thus making each tube $\frac{1}{3}$ as long as normal. Unfortunately,

Flat Cover "Design"

Fully Expanded



Vertical Baffle



V Baffle



Slant Baffle

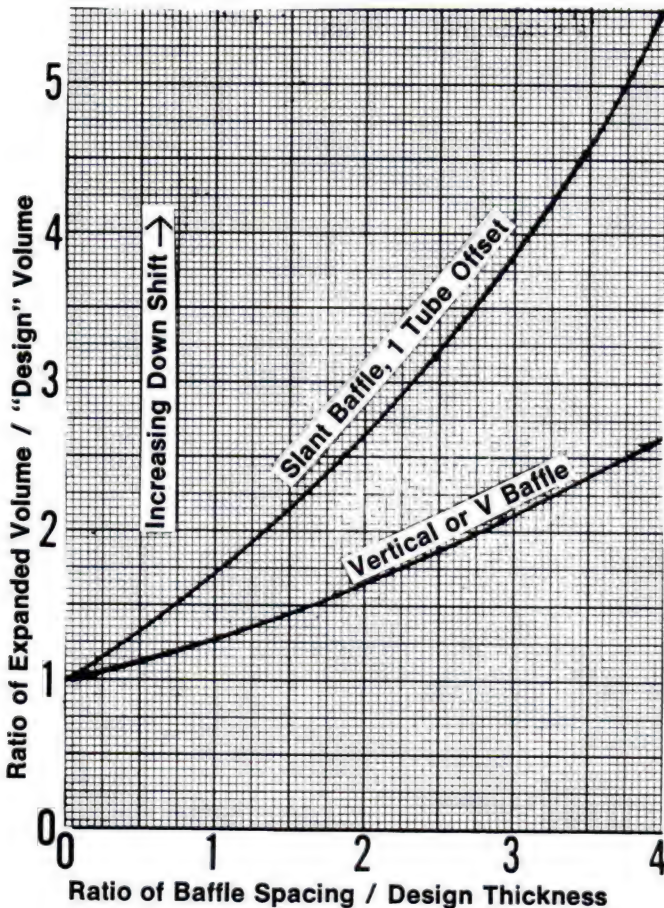
All illustrations for 6" space, 4" design thickness.



27 Warmlites, Zipped Together



Triple Bag, Hood Open, Collar Closed



that "cure" eliminates the capability of intentionally pushing the down out to the sides to make a thinner top for warm weather use.

By now you may be wondering why everyone uses cross baffles, instead of lengthwise baffles, since there would be less tendency for shift during use with lengthwise baffles. The problems with lengthwise tubes are the much greater tendency to shift while packing; the difficulty in redistributing over a longer tube; difficulty in thinning uniformly in warm weather; and problems with layout and marking on tapered bags. With properly baffled and filled bags there is no problem with down shift with cross tubes, and the makers of improperly baffled and filled bag obviously don't know enough, or care enough, to make lengthwise baffled bags. There is also the bad image problem: Some very poor down bags were made in the past with lengthwise baffles, so considerable advertizing effort was put into convincing people to identify quality with cross tubes, junk with lengthwise tubes, (similar to recent efforts to identify center top zippers with junk simply because some very poor quality bags have center top zippers.

AIR MATTRESS

Polyether foam pads have proven to be the most reliable, reasonably comfortable insulation under a sleeping bag, but the bulk, as with all foam pads is objectional. Air mattresses have had the advantage of minimum bulk and most comfort (softness), but have had the drawbacks of inadequate insulation for damp ground or snow, excessive weight (or unreliability in light weight ones), and difficulty of inflation. We have complete prototypes of a new airmattress designed to be directly interchangeable with the foam pads in Warmlite triple bags, which eliminates all the previous drawbacks. It is light (about 20 oz., including pump), warm as a foam pad, due to down filling, very durable urethane coated nylon, and extremely quick and easy to inflate or deflate. The sleeping bag carry sack forms the pump: A short plastic tube fastened in bottom of sack is plugged into a socketvalve in the air mattress. The sack is opened, to fill with air, top is folded closed, then air is simply pushed out of the sack into air mattress. It is difficult to imagine how rapidly and easily the air mattress can be filled this way, until you have actually tried it! A small flapper valve in the air mattress prevents air from escaping, yet you can simply hold it open with a finger for rapid deflation.

The air mat is constructed with box baffles to give maximum thickness with negligible changes in circumference, so it can fit directly in the foam compartment. A combination of sewing, heat sealing, and gluing is used in construction. A foam "baffle" is glued in around the valve, to let air in and out, but keep the down in. Since only cold, dry air is pumped in (you should not blow it up by mouth), which is generally warmer when let out, the down is always kept dry and clean. (We tried a down filled air mattress back in 1958, but blowing it up by mouth resulted in rapid saturation of the down).

Since each air mattress is individually hand constructed to fit each individual bag, the cost is necessarily high — excessively so, in my opinion. Also, we do not know what our production capacity will be by the time this catalog is distributed. Thus, we will accept orders, but cannot promise any particular delivery time. All bags will be sold with the 2" foam pad — The air mattress is simply an extra luxury option, to be purchased separately, so delivery delays on it will in no way limit the use of the triple bag.

When ordering the air mattress for an existing bag, please carefully measure the foam pad compartment and give us a sketch with those dimensions. Or, remove pad and trace around it on a big sheet of wrapping paper, and send that pattern with your order. When ordering the air mat with a new bag the only additional information you'll have to supply is the color choices of the smaller carrying sack-pump, which is included with the airmattress. — The standard sleeping bag carrying sack, for 64" girth bag, is 12 inch diameter by 22 inches long. The new sack, for the same bag with down filled air mattress will be 10 inches diameter by 20 inches long, and will put less pressure on the down.

Air mattress price, to fit any length bag from 56" to 70" girth, \$35.



Down Filled Air Mattress

Bev

BRIEF HISTORY OF WARLITE SLEEPING BAGS

Stephenson Warmlite sleeping bag development started in 1955 and has had a continuous program of improvement based on experience, testing and engineering analysis. Starting with an all down, zipperless, box baffled single bag in 1955 (which still surpasses all other make bags presently being produced for warmth and light weight), we tested and analyzed numerous ideas for improvements, many of which were suggested by our customers. The major improvements were the addition of double side zippers (1957); shaped fitted hood which zips over shoulders (1957); change from oval to rectangular foot, to allow greater foot spread (1959); full drawstring closure (collar) around neck (1958); change to 1.2 oz. high tenacity ripstop nylon (1958); addition of two different thickness tops (triple bag) (1959); built in foam bottom (1965); vapor barrier inside fabric (1966); aluminized reflective fabric (1968) (tested in 1961, material commercially available 1968); removable outer top on triple bag (1969); removable inner top on triple bag (1971 as option, 1973 as standard).

From 1957 to 1972 we offered single top bags in any loft, girth or height, with option to zip together, and a dual bag to sleep two. Relatively few dual bags and zip together options were sold. Frequent comments on those in use confirmed our experience that two in one bag is less efficient, either for warmth or comfort, than using separate bags, (although often more fun in warmer weather). By 1972 we found most of our sales were triple bags. When we made both tops fully removable on all triple bags in mid 1972, only triple bags were purchased, so production of single top bags was stopped. The zipper arrangement to allow both tops to be removed also made it possible to zip bags together on either side, thus eliminating the need for a zip together option or for the dual bag, or for selecting right or left bag. In fact, any number of bags can now be zipped together, as shown in the picture of 27 bags all zipped together!

Many other ideas have been tried, but were not put in production either because they offered no worthwhile advantage, or were impractical to produce, use, or pack. Many others are still being worked on. A few of the more interesting "failures" are listed here, since they get suggested so often in one form or another:

Dacron bottom; we made four in 1960. They were heavy, bulky, insufficient either for warmth or comfort. Foam bottom solved problem.

Built in hammock bottom. Inside bottom fabric was extended to form hammock for either side or end suspension, with down hanging underneath. Made in about 1961, it worked, but was difficult to set up and not very comfortable.

Shape bag differently — more tapered, less tapered, wider in middle, wider at shoulders, flare at foot, etc. Obviously there are reasons why each shape variation could suit a particular person. It is just not feasible for us at this time to adapt to them. We offer more variations in girth and length and color than any one else. To vary shape for each customer would require separate patterns and fill schedules for each, and would run cost up above reasonable level. Therefore we have adopted the shape which we have found provides comfort for most people with minimum weight and bulk. We can still adapt to realistic special needs, but will have to charge for the extra time required for such custom work.

Make bags for children. We do and will. But, the large range of sizes possible, and rarity of orders (most people simply won't pay for such a quality bag for a child who is going to rapidly outgrow it) makes it unfeasible to list every possible size. You can approximate cost by multiplying girth times \$2.50 plus \$5 or, for \$20 you can order just a covered pad matching zippers which will utilize the unused spare top(s) from your triple bags.

Make foot bags to be used with down parka for bag. This is a nice sounding idea, except that you need several times as much insulation when sleeping as you need when awake and active. Thus, if your down parka is warm enough to sleep in, it'll be too warm for any other use, and thus taken only for sleeping. A sleeping bag is lighter and more comfortable to sleep in. If it is cold enough to wear parka during day, you'll need much more insulation at night. You can best use your parka as extra insulation, with your bag, if you'll open parka up and lay it out on top of the bag. Strategically placed snaps or velcro tabs can hold it in place.

Foam and or dacron insulation. Fine for warm and wet use, such as on boats, river trips. We made our own bags for use on boats using $\frac{3}{4}$ inch foam. Although heavy and bulky they work very well for warm weather. If we were to produce our triple bag with same warmth using the best available synthetic (Polargard, slightly better than Fibertil II), the weight would increase 7 lbs., and packed bulk would double.

Waterproof bottom or waterproof complete outside. With our vapor barrier interior it is possible to put waterproof exterior on the bags, but not practical. Even if the bag were completely rainproof, with rainshield on hood, you couldn't get in or out of bag in a rainstorm unless you had either a rain shelter such as a tent or tarp, in which case rainproofing of bag serves no function, but makes the bag heavier and more difficult to pack or unpack. A waterproof bottom could help a few people who do not take a tent or a poncho to serve as ground cloth. We will make the bottom outside completely waterproof if you so request on your order, and do not mind the extra weight.

Use different zippers, or velcro. This suggestion comes only from those unfamiliar with the YKK coil zippers. We have used them since 1968 with no failures on bags tent and packs, and have found them to be the smoothest running, best sealing, softest and lightest fully reliable zippers available. There may be others as good (we keep looking, but haven't found any yet). When a better zipper becomes available we'll use it! Velcro is good for spot closures only, and is not a zipper replacement, since it is bulky, stiff, and difficult to align. We use it on collars.

Heavier nylon is often suggested, simply because others use it. We started with the heavier, stiffer 1.9 oz. ripstop in 1955, progressed to the better 1.2 oz. ripstop in 1958. Having had no problems with it in bags or tents (including tent floors) since then, we see no reason why we should go backward to overweight cheaper stuff. Maybe others do not feel the lighter weight and better feel can justify the much higher cost of 1.2 oz. ripstop nylon, but we do.

Use different baffle designs. This suggestion often comes from those who do not understand the function of baffles, so they count the number of makers using each type of baffling, then select the most used as best. If this approach was correct, then we should all be making cotton covered quilted dacron bags. We have never had any problems with down shift in our bags. We have consistently used closely spaced vertical box baffles. You'll note that many others use different baffle systems on different bags they produce, clearly indicative that they cannot decide which is best. It should be obvious that a vertical baffle will most consistently hold a uniform size space for the down, using minimum weight of baffle material. For the same size down tubes a V baffle will use about 50% more baffle material but will be cheaper to make since the material need not be cut into strips, and less sewing is required because each line of stitching holds two baffle sides. V baffling will hold down in position as well as vertical baffling, but we feel it is worth the small cost increase to save weight with box baffling. Slant baffles are simply understuffed box baffles. The only reason for using a slant baffle is to make the under fill harder to see in a bag hung vertically in a store display rack, and in fact, if you intended to use the bag standing up like that the slant baffle might actually be warmer than a similarly underfilled box baffle.

Use hidden baffle seams, as one other manufacturer now does. This consists of sewing baffles to a fold in cover material instead of flat onto cover. This hides stitches from view and makes a smoother surface, but any tension on cover fabric is then applied to stitches instead of directly thru fabric, which is likely to result in seam failures. This is claimed to improve seam life by protecting thread from abrasion, but, we have produced bags with exposed thread since 1955 with never a sign of thread abrasion. If others, who only recently started making down bags, have had problems with thread wear, then they should consider a switch to more abrasion resistant softer nylon thread. The cotton covered dacron, or all dacron thread is easier to sew with due to its stiffness, but that same stiffness prevents it from stretching with the nylon fabric thus overloading the thread, making seams feel harsh, and leading to rapid abrasion. The main advantage of hidden seams is smoother feel, but, underneath you, where you'll feel seams most, that construction leaves lumps while on our bag, with built in foam bottom, there are no exposed seams to lie on!

TEMPERATURE RANGES

In 1972 and prior years, when we offered many different thickness single top bags along with our triple bag, we included temperature charts to show average comfort ranges for various thickness bags. People vary considerably in their tolerance to temperature extremes, and, even the same person can get drastically different results just due to such minor things as being hungry, getting excessively chilled, being overtired, having a cold, smoking, or drinking alcohol. Since our triple bag provides a layer equal to average, warm down bags, and combined tops warmer than any other bag available, we felt it unnecessary to include a temperature chart in 1973 when sales had switched to triples only. But, questions received indicate people do want to see such a chart. Also, we've received sufficient additional reports to properly include the effect of vapor barrier and reflective insulations, which increase warmth when closed up snugly around you, but do not seem to effect warmth in warmer weather when open about the neck. Thus the temperature ranges shown for our bags, with vapor barrier and reflective insulation, are drawn sloped, to relate the increase in insulation to an equivalent thickness increase. We are offering a choice of porous or vapor barrier fabric on inside of the thin top, so a separate line is shown for each type.

The solid lines show comfort limits, for reasonable sleep, for "average" people. These lines, and the tolerance bands about them, are based on many accumulated reports from users of our bags, as well as many other down bags. The numbered points are the catalog claims of many other makers, and apparently represent the minimum temperatures their hardest users have reported. Altho many of these others still publish the grossly misleading figures from the old army reports (also shown on our chart for contrast, and a good laugh), you'll find their minimum temperature for each product have come much closer to reality. I now have rather mixed feelings about others exaggerating the performance of their gear: on the one hand, I do not like to see people misled, and do not like to have people cold and suffering due to inadequate gear. But, on the other hand, many of our sales are the direct result of people being misled into buying inadequate gear, and thus, when they have to replace it with adequate gear they buy ours instead of the warmer model offered by the guy who mis-led them. For you people who want

to see extreme performance reports, you'll be pleased to note we've had four reports from Alaska of people claiming to sleep warmly in our regular triple bags at measured temperatures of -70° F. But for the rest of you, who are not so hardy, please try to evaluate yourself relative to others, to know if you are average or a cold or hot sleeper, and follow our chart accordingly. If you believe you'll be warm at lower temperatures with less insulation, as others indicate, then you can plan on colder weather use.

Down provides somewhat of an automatic compensation for temperature changes. When warm, it picks up moisture from the higher humidity air, and tends to cling together more, thus reducing loft. When cold, the drier air tends to dry the down, increasing its resistance, and thus allowing it to pick up a considerable static electric charge, tending to fluff it up more. But, this capability can be rapidly destroyed if the bag interior is porous and allows water vapor from you to condense in the down.

When down is packed, the fibers interlock, greatly reducing the loft when unpacked. Thus, in warm weather, if you simply unroll your bag, with minimum disturbance, you can end up with less than the normal insulation, and thus reduce overheat. In colder weather, vigorously shake and fluff the bag, to relieve interlocking friction between particles, and get the maximum possible loft. If you have an under-filled bag, or one with slant baffles which thus acts as an under-filled bag, which lets the down easily shift off to the sides, it is especially important in cold weather that you fluff the bag, then distribute the down uniformly by careful patting, then be very careful not to toss and turn much, so you will not shake the down off to the sides.

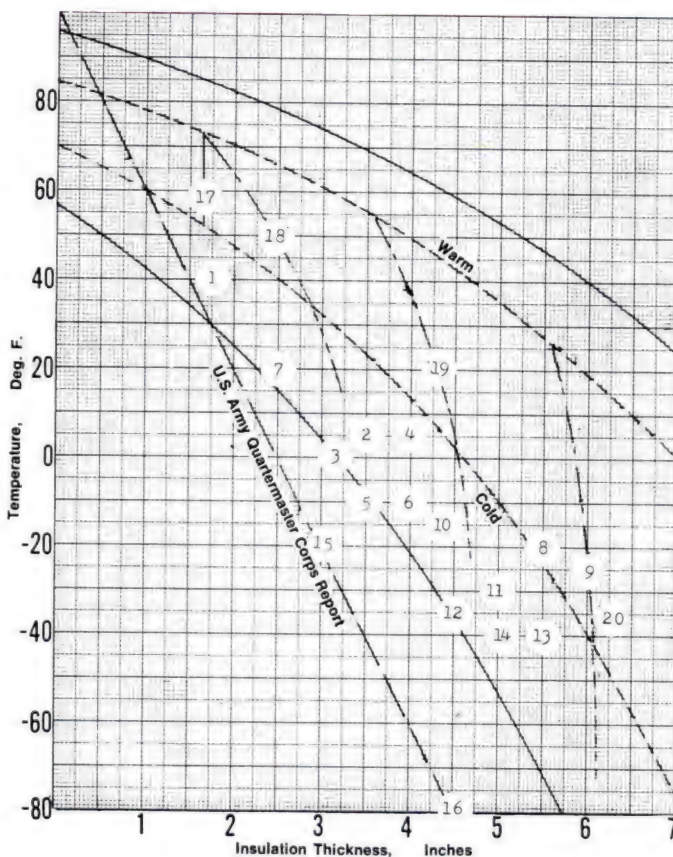
If you find your bag is too cold, even after proper fluffing, you can try the following. 1. If the bag has porous interior fabric, wear our no sweat shirt in it, or, lacking that, put on your rain suit or wrap up in your poncho. *Do not* put your poncho, space blanket, or any other plastic or coated fabric over the *outside* of the bag.

2. If you have a light down parka, lay the parka on top of the bag. If you plan for this in advance you can put little velcro tabs, or cord ties, on the bag and parka to allow you to fasten the parka over the bag. *Do not* wear your down parka in the bag, since it is less effective, very awkward, and can be very damaging to the down in the parka where you lie on it.

3. If your only parka is heavy, insulated with dacron or foam or similar, you may find laying it on top of your bag makes you colder because it will compress your bag more than it adds insulation. In that case, wear it inside the bag, or lay it under the bag if your insulation under you is inadequate.

4. Breathe into the bag. The heat in your breath will warm the bag, and the humidity will reduce evaporation and resultant chilling on your skin. This is *not* likely to make your bag wet, as some suspect, since all you are doing is *changing the source* of water vapor in your bag, not the net amount.

5. Keep your head covered. Your head is kept warm by blood circulation, no matter how cold your body feels. Thus, although you feel that your head is plenty warm, and doesn't need covering, it can actually be the major point of heat loss. There is thus a lot of truth in the old saying "If your feet are cold, put on a hat".



Thin Top Fully Closed, Lory

6. Don't get chilled in the first place! If you wait till you are miserably cold and shivering before you put on extra clothes, or go to bed, you may find it is impossible for you to get adequately warm, no matter how good your insulation.

7. If you know you have adequate insulation, or heat source, and want to warm up extremities, such as hand and feet, drink *small* quantities of alcohol. *Caution* — As altitude increases, the effect of alcohol on your mentality and breathing increases. Above about 8,000 ft. (depending on your degree of altitude acclimatization) alcohol is dangerous. Alcohol improves circulation to extremities and is thus useful for warming hands and feet and preventing frostbite, but, it *only* does so at the expense of other body heat. Thus, the net, overall effect of alcohol is to *reduce* total body temperature, but to improve your tolerance for cold, and protect extremities. Since alcohol also interferes with the pickup of oxygen, a small amount of alcohol can result in a terrible case of altitude sickness. So save the alcohol cure for low altitudes.

Make	Model	Girth	Weight	Price	Notes
1.	Gerry, Appalachian	60"	3 lb. 5 oz.	\$ 65.00	Duck down
2.	North Face, Superlite	60"	3 lb. 2 oz.	\$ 95.00	
3.	Alpine Designs, Summit	58"	3 lb. 13 oz.	\$ 92.50	
4.	Sierra Designs, #200	63"	4 lb. 11 oz.	\$118.50	Kit foam bottom
5.	Frostline, Bighorn	60"	4 lb. 11 oz.	\$ 61.00	
	Cougar	60"	6 lb. 8oz.	\$ 53.00	
6.	Gerry, Mountaineer	63"	4 lb. 8 oz.	\$117.00	Fiberfil II
7.	Northface, Bigfoot	60"	4 lb. 8 oz.	\$ 65.00	
8.	Ski Hut, Chevron	54"	4 lb. 10 oz.	\$141.00	
9.	Sierra Designs, Expedition	63"	5 lb. 12 oz.	\$176.50	
10.	North Face, Ibox	64"	4 lb. 4 oz.	\$120.00	
11.	Northface	64"	5 lb. 5 oz.	\$160.00	
12.	Alpine Designs, Everest	60"	5 lb. 6 oz.	\$140.00	
13.	Holubar, Ultimate	63"	6 lb. 1 oz.	\$165.00	
14.	Gerry, Expedition	64"	5 lb. 7 oz.	\$140.00	
15.	Rec. Equip., McKinley	—	4 lb. 8 oz.	\$ 75.93	
16.	Rec. Equip., Denali	—	5 lb. 8 oz.	\$123.68	
17.	Warmlite, (thin top) porous	69"	2 lb. 12. oz.	\$160.00 Total	
18.	Warmlite, (thin top) vapor barrier	69"	2 lb. 12 oz.		
19.	Warmlite, (thick top)	64"	3 lb. 10 oz.		
20.	Warmlite, both tops	64"	4 lb. 10 oz.		

Plus 27 oz. foam pad.

WARMLITE TENTS

Stephenson's Warmlite tents were primarily designed for severe weather mountaineering, where extremes of wind, rain and snow are most demanding. The objectives of maximum wind stability and very simple set up results in a design which also minimizes weight and packed size, making them also ideal for back pack and bicycle camping. For example, the basic 2 man tent weighs less than 3 lbs. and sets up in less than 5 minutes, with only 3 stakes. This simplicity of set up will appeal to those who object to the spider web like supports and complicated adjustments required with most other tents, especially at night, after a long tiring hike, or during storms.

There are many different uses for tents, and different features are desirable for these different uses. Rather than make a completely different design for each use, as is commonly done, we have kept the same basic tent design and structure, common to all uses, and added these special features, as required or desired, as options. Presently we offer 3 sizes. In the past, we have referred to each tent size with a model number which indicated its order of development (for example, Model 8 was the 8th design, in this basic configuration). Since this has caused some confusion, we will now designate tent sizes which represent the number of persons we feel can comfortably sleep in them. Thus, the previous Model 6 becomes a 2 (2 adults), Model 7 becomes a 3 and Model 8 becomes 5. All options, and color, are referred to with letter codes, listed below.

- R — Inner wall (liner, or basic tent) has aluminized coated surface (standard).
- U — Inner wall of uncoated, porous 2 oz. nylon (option, not recommended).
- E — Ends of tent double walled (lined), for arctic or severe cold use.
- T — End walls translucent (not aluminized), designation used only with end liners or aluminized outside.
- S — Side windows, screened, for cooling in very hot weather.
- D — Drop away top.
- 2D — 2nd door in backend, applies to 3 and 5 tents only.
- Y — Yellow.
- G — Green.
- B — Blue.
- A — Aluminum, normally listed with another color to indicate aluminum top center section, ends of other translucent color to let light into tent.
- W — White, pigmented finish, for maximum sun reflection.

Thus, for example, if you wanted an all weather 3 person tent, for winter or arctic mountaineering and hot desert shelter, with access from both ends, you'd order a 3R,ET,S,2D,YA, and would get a 3 person tent with standard aluminized inner wall (liner), yellow double end walls, side windows, two doors, and aluminum outer top.

AERODYNAMIC DESIGN

The circular arc cross section shape and conical shaped ends promote a smooth, steady air flow with winds from any direction. The lateral drag force (overturning force) is considerably less than on other tent designs. Slight lift is created over the main body, thus maintaining the shape with minimum loads on the support poles. The lift force, and air flow causing it, will tend to prevent accumulation of snow, and will remove snow that may have accumulated when the wind was still. It's thus an ideal shape for winter camps. The steady nature of air loads eliminates the heavy flapping dynamic loads that occur on all tents with flat surfaces, sharp corners and ridge lines, thus providing greater life, and resistance to higher winds than any other tent design. This has been well demonstrated in storms in the Sierras, Alaska, and the Himalayas where it has easily survived in severe storms with no damage, when often all other tent were destroyed.

THERMODYNAMIC DESIGN

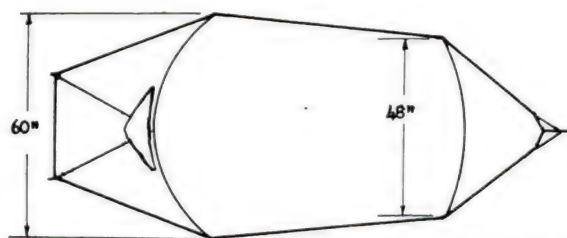
To minimize heat loss it is desirable to minimize surface area and internal air convection. The optimum external aerodynamic shape accomplishes both of these objectives by providing a minimum surface area and height for a required internal volume and floor area.

Good ventilation is required to permit easy breathing, minimize condensation under humid conditions, and increase cooling in very warm weather. Large, screened, sheltered vents are thus located at each end, close to the ground and at the tent peak. This promotes the maximum possible thermal-humidity driven ventilation. Lighter weight warm, moist air will rise up thru the top vent, to be replaced with cooler, dry air thru the lower vents. Wind from the side, or foot end will reduce pressure at the top vent, further improving ventilation. Cover flaps are provided on vents to control excessive wind driven ventilation. Top vents have zipper closure to positively block fine snow.

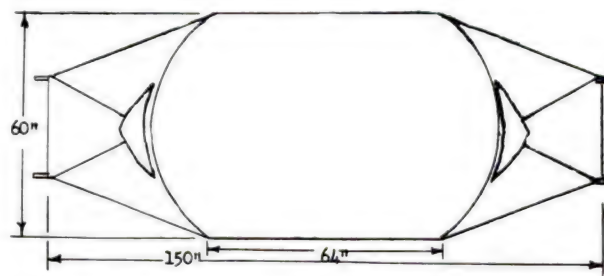
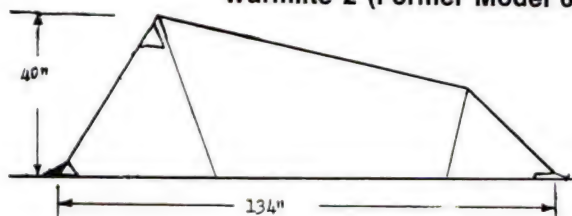
S models have large screened windows in each side, provided with zippered covers which can completely seal the screens or be tied out to protect the insides from rain when open. This provides cross ventilation like a screened porch, and is ideal when it is desired to use the tent for insect and rain protection, yet it is too warm to be comfortable in a normal tent.

A top liner spaced inside outer wall provides insulation for extra warmth and for condensation reduction. This is somewhat similar to other double wall (tent-fly) construction, except it is more efficient due to uniform spacing and complete sealing. It is also far simpler to use since it is integral with the tent and requires no attention on your part.

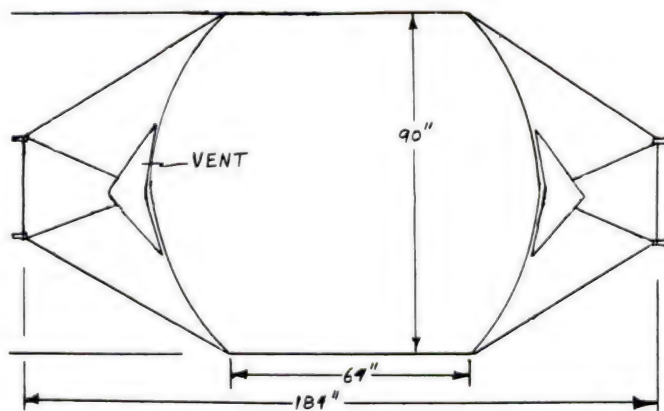
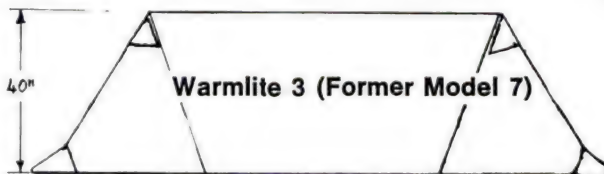
SIZE: The erected tent sizes are shown in the drawings and illustrated in the photos. There is enough height and width to permit 2 persons to sit side by side across the width. Model 2 tents will comfortably sleep 2 adults with their gear, or 2 adults and a child. Model 3 will be roomy for 3 or snug with 4 adults. Rolled sizes with poles are 15" long by 5" diameter for Model 2, and 15" long by 6.5" diameter, for Model 3. Poles take half of the volume, and could be carried separately for more compact packages. Model 5 tents are comfortable for 5 to 6 adults, and pack 15" by 8" dia.



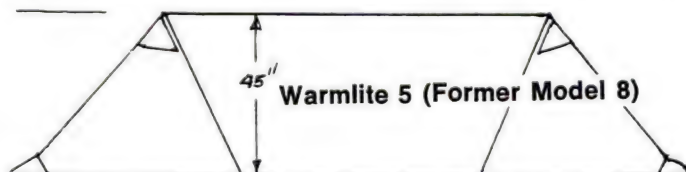
Warmlite 2 (Former Model 6)



Warmlite 3 (Former Model 7)



Warmlite 5 (Former Model 8)





5R

3R

2R



Warmlite 2 RS

Billee



Film Gap Liner in 3R Tent .



Inside 5 (Former Model 8)

Laura, Bev, George, Joan, Eric, Bill



Model 2DF



Drop Front Half Open



Releasing Top Buckles



Drop Front As a Cave



Drop Top , Folded Open

INSECT PROTECTION: Often the most important function of a tent is to provide protection from insects, such as Mosquitoes. For this protection all vent openings are covered with lock woven nylon mosquito netting. The mosquito net inner door has full zippers along side and bottom, (where it joins the 4" raised floor lip) for a positive seal. Tent weights and prices:

Model	Weight	Shipping Weight	Price
2R	2 lbs. 15 oz.	4 lbs.	\$150.
2RS	3 lbs. 3 oz.	4.5 lbs.	170.
3R	4 lbs.	5 lbs.	190.
3RS	4 lbs. 4 oz.	5.5 lbs.	210.
5R	5 lbs. 9 oz.	7 lbs.	240.
5RS	5 lbs. 13 oz.	7.5 lbs.	260.

End Liners: For artic use it is often desirable to line the ends of tents as well as top. This is NOT needed for condensation control, but will make tent a few degrees warmer.

Cost: Model 2 \$15, Model 3 \$20, Model 5 \$25.

EXTRA DOOR: On Model 3 or 5 it is possible to put a second door in back end. This adds about 4 oz. and costs \$12 extra.

DROPAWAY TENT TOP: Did you ever wish you could lie in your bag and look at the stars, yet still be in your tent when ready for sleep? You can now do that in our tent with the drop away top. A long zipper is run from the ends of front pole up across front just above the door, and 2 straps with snap buckles are run from the top to front tie loops. Unzip and the front falls away, leaving the rest of tent standing like a leanto. Unsnap buckles and the whole tent top folds down on you, leaving head, and torso exposed. When ready for sleep, or at first signs of storm, pull top by poles and snap buckles. Then zip up front, all from inside your bag. In rainy weather place pack under zipper line and zip open; front will lie on pack and slope down and out, so no water will get into tent, but you can look out a wide open front.

Cost: for new tents this option adds \$10 to price. Older tents can be modified this way for \$14 plus return postage.

Cookholes: A cookhole is merely a floor opening which can let in dirt and water right where you want floor the cleanest, and will let spilled food get under the tent floor where it can't be cleaned up, thus leaving tent dirty, and sticky and smelly so it will attract bugs and animals. It is safe to place stove directly on tent floor, but, if on snow it is best to put an insulating pad under stove to prevent snow melting and tilting of stove. On our tent, the under door vent makes it very easy to wipe up spills and brush it out of tent without opening the door!! We do NOT put silly cook holes in our tents.

MATERIALS:

Tent top and floor fabric is all 1.6 to 2.0 oz. ripstop high tenacity nylon, having very abrasion resistant coating of urethane rubber for complete waterproofness. This same basic fabric has been used in our sleeping bags since 1958, with various coatings on tent tops since 1964, and floors since 1967, with no problems.

Aluminized reflective fabric, as used in our sleeping bag interiors, is used for tent liners for extra warmth or to make the tent dark so you can sleep late, or shield out the midnight sun in the artic. The warmth effect depends on temperature of surrounding objects. If warm, as in summer, it has little effect, but if very cold, the effect is very noticeable. This also shields out some of the sun's heat during the day.

The ends of each pole tube are reinforced with heavier nylon wear pads. Access to these tubes is thru slit on the outside at one end, thus allowing the poles to be inserted and removed from the outside with no opening into the interior. Staking loops are provided at each pole end, although they normally needn't be used. The three end loops which must be staked, or tied out, to erect the tent are each backed with shock cord to automatically take up slack due to expansion of the tent. A hanging loop is placed at the front high point, and a pocket is placed on the front wall for safe keeping of small breakable items. Poles are a specially drawn aluminum alloy, which has had good success for arrows and pack frames. Poles are made in about 15 inch sections for easy packing, with an elastic ended nylon cord to hold sections together. Polyethylene "Cap Plugs" cover Pole ends to protect the fabric tent tubes from abrasion. All zippers are lightweight, corrosion-free nylon or Delrin, which have proven trouble free in all environments and are very strong and easy operating.

TENT COLORS

The basic tent colors are yellow, green, or light blue. For special uses, we will also make tents with aluminized or white pigmented outside. Color choice should be based mostly on your uses for the tent. To aid that choice, a list of advantages and disadvantages of each color is given below:

YELLOW: The most popular color. Most visible in dim light at dusk, and in evening. Lets in maximum amount of light. Warmest, brightest appearance inside. Not as visible in bright sun as orange or blue, in rocky or sandy areas. Shows dirt easily.

GREEN: Blends in well with natural surroundings, often being nearly invisible (This becomes a disadvantage when returning to camp late). Darker inside. Very easy on your eyes.

BLUE: Stands out very well in bright light. Adds very noticeable, but not bright color to your camp. Lighter inside than green. Difficult to see in dim light or on snow.

ALUMINUM: Low radiation emissivity keeps whole tent warmer at night in all weather except rain. High reflectivity keeps tent cooler in sun (but should be used with side windows open for maximum effect). Difficult to see in snow. Makes tent darker. We recommend that aluminized top be used with yellow ends, both to improve light inside and to make tent easier to find. This is the best for a tent intended for both very cold weather and hot desert camping.

WHITE, pigmented: This new finish is very densely pigmented with highly reflective titanium dioxide, which gives the highest sun reflectivity, combined with high emissivity, resulting in the coolest possible tent in the sun. The radiation emissivity is about the same as yellow, blue and green fabric, so night time performance will be about the same. The amount of pigment and coating required to get full sun reflection results in heavier fabric, making a tent 3 to 6 oz. heavier, and makes the tent quite dark inside. Obviously not very suitable for snow camping unless you wish to be invisible.

We do not use orange, since it is a most impractical color for tent. It is very bright and glaring in good bright sunlight, but is one of the first colors to disappear, and appear black, as light gets dim. It is ok on snow, where even black would stand out by contrast. Many people have been misled into thinking orange was the most visible color, under all circumstances, by the results of an airforce study on aircraft. That study was aimed at finding a color which would aid visibility when it was so bright that the anti-collision strobe lights were hard to see. As light gets dim, the strobe lights stand out very well, and color of the planes is insignificant. Thus, if you intend to put a strobe light on your tent, you can feel secure in making it orange. Otherwise, stick to yellow. Red or orange trimming, which will appear as black trim in dim light, can be added to make it stand out better on snow.

TENT DEVELOPMENT

While hiking up into the mountains one day, someone commented on how silly it was to climb up while carrying Down on our backs. We should have bags filled with up! — This comment led to serious discussion and eventual evaluation of a sleeping bag filled only with air, using closely spaced layers of fabric or plastic to prevent convection. It was found that 3/4" air gap would be near optimum, but it would require a housing which would not flutter and flap like regular tents, to prevent forced convection. A half cylinder shape was selected, since it would have best stability in wind from any direction, and gave minimum surface area. A 1 man version was designed and built to match my 2 lb. fill down bag. Ice house tests confirmed the accuracy of data obtained, with an exact match on insulation, but, it weighed 4 1/2 lbs., compared to 2 lb. 14 oz. for the down bag. Obviously something lighter than 1.1 oz. nylon, or more efficient in design was needed. By making it for 2 people, the surface area per person could be reduced, and by making end conical, and using magnesium poles, curved and hoop loaded, the basic support structure was made lighter and stronger, and simpler. Using 3/4 mil. mylar for inner layers could get the weight considerably below that of Down. A prototype of this was built (model 3), but using very cheap nylon linings. This proved the structural design would work, but, also proved that the accuracy required in fitting the many inner liners would not be practical to maintain. Also, bonding of mylar was not practical at that time. Work did continue though, and a practical design and good mylar bonding was achieved by 1969, now sold as our filmgap liner.

Meanwhile, the crude nylon liner was removed from the 2 man tent, and it was used as a camp tent. Experience in extreme winds revealed it was far more stable than anticipated, sitting quietly while my conventional flat sided tent beat itself apart. We offered to make tents of this design for the American Everest Expedition, for material costs, but, since they were getting all supplies donated free, they were not interested.

In 1963 we were asked to produce equipment for the 1964 Karakoram (Himalayan) Expedition, headed by Graham Stephenson (not related). We produced all their sleeping bags, down parkas, overboots, and tents using the new design. We made 6 Model 4 tents (about 1 ft. longer than Model 6) and 3 Model 5 (about 1 ft. longer than Model 8). These were of "conventional" 1.9 oz. porus ripstop nylon, fully lined (double wall) with porus 1.5 oz. nylon, with large, single vents on each end. They worked very well, being roomy, light, quick to set up, and extremely stable and quiet in storm winds. Those same tents have been used on long trips, all over the world, every year since, and are still in good shape, except for severe fading of the nylon. But, heavy condensation was a problem, as it has been with all porus tents. The porus fabric does make a good sponge to hold the water, but it then transfers to you when you touch it, and takes a long time to dry out. We tried a new tent, Model 6, with differential height vents, and found reduced condensation. A plastic sheet put over one tent showed that sealing the fabric would improve venting and make tent drier (much like plugging holes in a chimney will improve draft. The result was a tent that was dry enough to make it practical to eliminate the liner for relatively dry area use, such as the Sierras. Thus, in 1965 we started production on Model 6 tents, with options of the standard liner (6L), or the unlined 6, or a hot weather version, 6S, with screened side windows. In 1967 George joined us on a full time basis producing tents.

About 1965 we exhausted the supply of magnesium tubing, so started looking for improvements. Materials evaluated were higher strength magnesium, stainless steel, titanium, fiberglass graphite-epoxy, and

higher strength alum. I found the high strength aluminum 7001-T6, being used for arrows, could make the lightest, strongest pole. Despite being very expensive due to many drawing and annealing steps required, this appeared to be the most practical material to assure maximum reliability and minimum weight. Other materials are being regularly evaluated (such as newer graphite-epoxy, boron fiber-aluminum, titanium, and even grown sapphire, which has fantastic properties, but cannot be grown in a curve, and would cost about \$20 *per inch*), but none can presently match the 7001-T6 aluminum.

In 1969, due to demand for a larger tent, the Model 7 was produced. In 1970, an even larger, Model 8 was produced, and aluminized reflective fabric was introduced for liners and tent tops. A new urethane-silicone coating was developed to give greatly improved tear strength and better fabric sealing (later this was widely adopted by other tent makers, using various names, such as "polymer coatings" to distinguish it from earlier stiffer urethane coatings which had low tear strength due to stiffness and tight bonding of fibers). In 1972 we found a small, high quality fabric coating plant, which could supply better, more consistent coatings on fabrics, and was willing to try other materials. (This led to the development of excellent vapor barrier coatings for sleeping bags and clothing). They developed lighter, more flexible, lower emissivity aluminum coatings for tent and bag linings, and the special white coating for desert tents. The improved quality and reduced weight and cost of the aluminized coating led to making aluminized liners standard on all of our tents in 1974.

During 1972 a customer requested some way of dropping the tent, from inside, so he could look out at the stars when he didn't need the tent, yet erect it instantly from inside his sleeping bag. The previous skylight models were complicated, only practical on single top tents, and left one looking thru mosquito net. We thus developed the drop front, (or drop top, whichever you wish to call it), which has been enthusiastically received. (About 1/3 of tents sold in 1973 had that option).

In 1973 zippers were put on vent covers and side window covers, for more positive snow seal, since most tents seemed to be used as much in winter, and snow storms, as in summer. The success in surviving winter blizzards and mountain storms, without the constant digging out of other tents, has earned the Warmlite tent a reputation for being the winter or expedition tent.

CONDENSATION IN TENTS

One of the minor problems in tents, yet apparently major concern of tent buyers, is condensation. Basically, condensation will occur on any surface which is colder than the dew point of the air next to it. (ie, the temperature at which the moisture in the air is all the air can hold, or 100% relative humidity). Thus, unless you see fog forming around your tent, condensation will only occur when the tent is colder than the air around it.

There are 3 ways the tent can get colder than surrounding air: 1. Radiation of heat to colder surroundings (the cause of clear weather condensation); 2. Conduction to cold rain falling on the tent. 3. Addition of heat and moisture inside the tent, from drying wet clothes, cooking, breathing and sweating. A tent wall at outside air temperature can then be below the dew point of the inside air.

If condensation is on the outside, we call it dew, and ignore it (altho it takes as long to dry that off as inside condensation). If the tent is porous and wicks the condensation into the weave, most people ignore it, even claiming it doesn't exist, altho that is harder to dry out than surface water on a coated fabric. If it forms on inside of a single wall tent, and is shaken off by impact of rain drops on outside, some claim the tent is free of condensation, but leaks! Some people can look at a few drops of condensation on one end of a tent and get all upset, claiming the tent is a total failure (but they don't trade in their house or car when similar fogging occurs on windows or bathroom walls). Others will look at a tent top covered with very heavy condensation, which hasn't quite gotten heavy enough to drip, and say the tent is perfect, since it kept them dry, and will insist others are nuts to carry a double wall tent just to avoid such minor condensation! — Thus, condensation is not only very variable, depending greatly on camping conditions, but also a highly subjective subject, depending greatly on the attitudes, experience, and expectations of the observer.

There are several known ways to reduce condensation, which are practical for application to mountaineering tents. Ventilation is often considered the most important, but is not often very intelligently done, and can only help reduce that part of condensation caused by moisture added inside the tent. If you will observe how often everything outside is covered with dew in the morning you'll realize how often it is possible to get condensation even when no one is in the tent, and ventilation can only make that worse. In any case; for ventilation to be effective, it must include a means for getting inside air to move out and replacement outside air to move in (and should not rely on wind, which is generally absent under heavy condensation conditions), and it *must minimize* contact of the moist inside air with the cold tent wall. Relying on flow thru the fabric (porus fabric) only guarantees maximum contact and maximum condensation, altho admittedly the porus fabric can *hold* a lot of condensation, but once thoroughly wet it is sealed with water, and thus no longer porous.

Most tent manufacturers have to rely on porus fabric and wind to provide ventilation, which works when there is wind, if you don't mind the chilling effect of wind blowing thru the tent. But, most nights are windless, and when the wind does blow it is nice to be able to control the ventilation to just what you need. Fortunately water vapor

is light (about .6 the average weight of air), and warm air is lighter than cold, so the warmer moist air inside an occupied tent will tend to rise. By simply putting a large vent at top of tent to allow the rising inside air to escape, and putting inlet vents at bottom of the tent to allow drier outside air to enter, we provide good ventilation which does not rely on wind at all. Covers on these vents are then used to limit excess wind driven ventilation, and thus prevent unwanted chilling or snow entry.

There are several things you can do to reduce moisture added to the air inside the tent and thus minimize condensation, in *any* tent.

1. Use a vapor barrier lining in your sleeping bag, which also keeps you warmer and prevents dehydration.

2. Avoid spreading wet clothes about — minimize trips in and out on rainy weather; fold poncho as you enter so wet side is folded in; wear vapor barrier clothes to avoid sweat soaking your clothes.

3. When cooking, keep pots covered as much as possible (saves fuel too). Operate your stove a couple of minutes after removing last pot to warm tent and carry out excess moisture.

A double wall can reduce condensation or at least, on some tents, hide it from view. There are two ways a double wall can act to reduce condensation: 1. The insulative air gap between layers, and radiant heat shielding by outer wall, both serve to keep inner wall warmer, and thus reduce or prevent condensation *on inner wall*. 2. A sealed inner wall will block flow of air to outside wall, and thus reduce condensation on outer wall. The usually used urethane coating lets some vapor diffuse thru allowing some condensation on outer wall. A saran coating will virtually stop all vapor diffusion. By blocking vapor at the inner surface, total condensation is reduced, inside humidity is held higher (thus keeping you warmer), and the condensation which does form is on inside surface, where you can see it and sponge it off. Of course, if you do not wipe visible condensation off with a rag or sponge you're likely to wipe it off with your head and clothes, which can be most annoying. One thus has to choose between a sealed inner wall with visible, removable, less total condensation or a porous inner wall, with slower morning drying but all condensation out of sight, and hopefully out of contact with occupants. Our personal experience, and the reports of most of our customers, has supported the use of a sealed inner wall. But, we have gotten enough comments from others, who would prefer the porous inner wall, that we have decided to offer that as an option. You can thus order our tent either with the standard aluminized coated inner wall, or with water repellent but porous 2 oz. ripstop on inner wall. Weight and cost are identical (This 2 oz. nylon costs much less, but, in our way of construction requires individual hot cutting of parts, which eliminates cost savings).

There are various names used for the walls of double wall tents, which tend to imply different things, and thus confuse people. The different names are mostly derived thru development, not any direct intention to mislead. If we look back at tent development and camping habits, we find early tents made of heavy cotton, which could be made fairly water repellent, and being very thick and absorbent, could easily hold all condensation unnoticed. When lighter weight cotton and nylon tents were developed, they were not rain proof. A simple solution was to place the dining fly (a simple tarp used to shelter the camp table from rain or sun) over the tent to break the force of the rain. Another solution was to make tents of rubber or vinyl coated fabric. Since these were merely copies of the previous heavy canvas tents, no provisions were made for ventilation or condensation control, and frequently condensation would rain on the occupants. In typical human illogic and unscientific guess work, some people assumed the coating was the direct cause of condensation, failing completely to note that the major difference was that the heavy porous tent absorbed the condensation that previously occurred, so they were unaware of it, despite the hours they spent drying their tents! These two "solutions" were combined in later tents, the basic "tent" (ie, inner wall) being made of porous fabric, with a second tent, the *fly*, made of coated rainproof fabric, erected above it. The erection of two tents, with separate tie outs, was difficult and time consuming, and the exposed, open sides of the fly made it vulnerable to winds, and thus it was generally left home on windy mountaineering trips. But, the single wall light nylon tents with poor vents did not have enough porosity, or thickness, to absorb all the condensation which would occur, and tents got rapidly coated, and sealed, with ice. A "solution" to this problem was a second wall, an absorbent *liner*, hung *inside* the tent, (thus avoiding all the problems of outside erecting and wind) which provided an insulating layer of air and a second absorbing surface. This worked fairly well, but required excessively long drying time, or carrying a lot of water or ice. Also, when there was insufficient drying time, as would occur with long storms, the accumulated condensation would exceed the absorption capacity of the liner. Most backpacking and mountaineering trips are scheduled with very little time allowed for drying gear, thus the most common complaint about a porous tent and liner is the excessive weight when packed wet or frozen.

We avoided the separate "fly" problem by building it in, as an integral part of the tent (a feature which is appearing in more tents every year.) But, when a "fly" is built in, or intimately fitted to the "tent", which is the tent, fly, or liner? A double wall tent could "correctly" be called a tent with liner, or a tent with fly, but the function is the same, no matter what you call it. Most others, making tents with coated outer wall and porous inner wall, have chosen to capitalize on the bias against coated tents by calling it a porous tent with coated fly.



Inside 5

Laura



Warmlite 3R

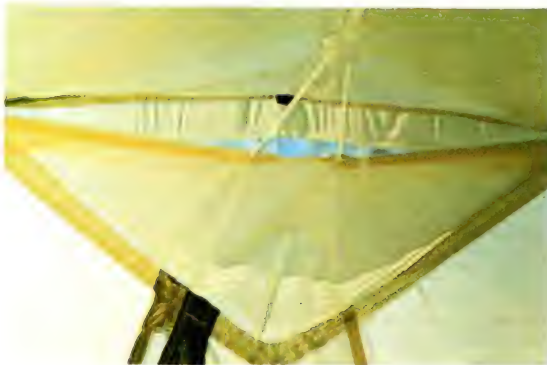


Warmlite 2 (Former Model 6)

Joan Stephenson



Side Windows Open, Warmlite 3RS



Top Vent Open



Warmlite 5 (Former Model 8)

Chewy , Laura



Top Vent Zipped Closed



Slumber Party in Number 5

We have considered the basic storm shelter, the outer wall, to be the tent, and have thus called the inner wall a liner, causing some confusion with the old absorptive liners. When we made some tents without inner walls, we differentiated between those by adding the letter L to model designation for the double wall, or liner models, and R to that if the liner was aluminized. Now that we make only double wall tents, with choice of either aluminized coated or plain porous inner wall, a change in designation is due. We will thus use the following letter codes, after tent model (size) number:

R — reflective, radiation regulating coated inner wall
U — uncoated, porous ripstop inner wall

Radiant heat loss can only be reduced by reducing the emissivity of the fabric. This is accomplished by aluminizing the coating with aluminum pigment. Porous fabric can also be aluminized by vapor depositing in a vacuum (as done on our sleeping bag fabrics), but that is not durable enough to last on a tent. All the inner walls of our tents have an aluminized coating (except when a translucent coating is requested for end walls). The outer wall can also be aluminized to make the tent slightly warmer on clear nights, or to make it cooler in the sun. An aluminized exterior will have little effect on condensation when the standard sealed inner wall is used, but will greatly reduce condensation on outer wall when a porous inner wall is used. Generally, when aluminum outer top is ordered, we make the end cones in the color selected, since an all aluminum tent would be too dark.

Condensation on tent floors has been quite puzzling. Tests with polyethylene vapor barrier sheet placed under the floor have shown that most condensation on floor comes from vapor in the ground, or snow, under the tent. A most puzzling occurrence is to find water under your foam pad, and no where else, even with a waterproof pad, or with vapor barrier over the pad. Apparently vapor in the ground will rise, pass thru the urethane coating on floor, concentrate and condense on top of this floor. If you have a porous pad with urethane coated nylon cover on bottom side, the condensation will most likely occur on the inside of bottom covering, especially if top covering is porous and allows excess water vapor from you to get into the pad. Unfortunately you will not see the water inside the pad covering, so will likely pack a heavy wet pad unknowingly. To prevent these problems, on damp ground or snow put a polyethylene sheet *under* your tent and *over* your foam pad if it presently has a porous top.

FILMGAP INSULATING LINER FOR TENT

A unique new insulating liner is now being made for the Model 7 tent which eliminates the need for sleeping bags. The unit hangs from the tent and provides a warm insulated compartment for two, equivalent to two down bags with 4.8" of insulation, yet is fully adjustable for warmer weather. Polyether foam pads underneath provide bottom insulation and comfortable padding. Amazingly the weight of the basic Filmgap insulating unit is only 3 lbs., the packed bulk is less than a single down bag, and the cost is less than the cost of the two down bags, it replaces. The Filmgap* insulation consists of 10 layers of aluminized plastic film with 3/4 inch air gaps between layers. The unit is constructed like a small wall tent hanging from the tent interior. An oversize end closure at the neck end permits the user to sleep with head outside of the liner, but inside the tent, thus eliminating need for a hood. The neck closure may be regulated for any amount of ventilation for warmer weather use, being tied completely open at about 60° F. When not needed during the day, the liner can be easily detached at the front end and folded into the back end of the tent thus making the full tent space available for use. All exposed interior and end parts are nylon for wear protection.

The wind stability of the tent assures only convection free air between the film layers, thus providing efficient insulation. The Filmgap liner has only been available since 1970, but the Warmlite tents, sold since 1964, were originally designed in 1958 to house this type of insulating unit. The fabric unit constructed at that time worked well but weighed as much as a down bag and cost much more. New materials, and new construction designs, have now solved those problems.

GO LITE PACK

We are now producing a new ultra lightweight back pack with many advantages over other packs. This was developed thru years of very good experience with the "Jack Pack."

Features: 1. True hip carry systems (3 point suspension, no front belt or pressure on backbone), rapidly adjustable to any position. This hip carry is far more comfortable, and gives far better pack control, than any other type of carry. The 3 point suspension system used allows flexibility over the hip, so the normal alternate rise and fall of each hip is easily accommodated (unlike the rigid hip suspension of several other hip-waist band carry packs which were improperly copied from the original Jack Pack).

2. Full coverage nylon net shoulder unit, uniformly distributes forward balancing load across shoulders and upper chest. Vertical loads may be carried on shoulders without being pinched by the pack. The shoulder system is similar to a cut away vest, made of heavy nylon net. It wraps completely over the shoulder and back down to the base of the pack frame, with independent buckles for each strap on each side. The forward balancing load is taken by continuous lacing from tape loops along shoulder center-line back to the pack. This makes the load self equalizing across the whole shoulder. To prevent the wide net front from pulling under your arms, a single center strap is provided, with a quick release buckle, to pull both sides to the center just below your collar bone.

3. Ultra lightweight high strength frame, using same alloy tubing so successfully used on our tent poles. With epoxy bonded aluminum fittings having joint strength greater than the basic tubing.

4. Pack design having maximum usable volume within width, depth and height limit similar to other packs. Six compartments with zipper access from back and sides allows you to carry sleeping bag on top and still have complete access to pack. This avoids the awkward bottom bulge of bottom carried sleeping bags, and protects your bag from dirt, water, and wear. Despite the silly inaccurate arguments on balance put forward by many others to justify carrying sleeping bag on the bottom, the only true reason was to allow access to top opening pack. Our pack, has no such restriction.

5. Pack fabric is waterproof, reflective aluminized. This reflects the sun and keeps your pack much cooler, thus preventing damage to heat sensitive items like film, cheese, butter. The waterproof coating protects against rain, and by minimizing absorption and transmittal of food odors, reduces chances for rodent and bug invasion into your pack.

6. Total weight only 2 lbs. (small) to 2 lb. 5 oz. (large) about half the weight of most others.

This pack was designed mainly for the recreational packpacer who carries 15 to 50 lbs., and is more than strong enough for all normal backpacking and climbing. For heavier loads, or for long tours where it will be carried often on airlines as checked baggage, or thrown about on trucks and busses, we can make it with frame members double strength, and with sack of heavier 5 oz. or 7 oz. nylon fabric. The heavy duty frame increases weight 6 oz. The heavy duty fabric increases weight 5 to 7 oz., and is available in red, maroon, medium blue, brown, dull green and green-grey.

PRICES: Large, \$70. Medium, \$66. Small, \$62. Heavy duty frame, add \$2. Pack sack and frame sold at a unit. Extra sack bag \$24.

SIZING: To be sure of best fit we need the following dimensions: Locate the two top front corners of your hip bone. We'll call those points P. Most measurements are made from those points.

1. Back hip; measure from P to P around back of hip.
2. Front hip; measure from P to P across front.
3. Lower hip girth; measure around hips 3 to 4 inches below P.
4. Waist; measure around waist about 3 inches above P.
5. Shoulder load width; measure chest width at armpit height.
6. Neck width; width of neck at shoulder level.
7. Breast-shoulder height; measure from top of shoulder down to center, or nipple, of breast, along chest contour.

Note: If your waist is as large or larger than the total of 1 plus 2 then you'll have to use the front snuggler strap to carry any load on hips, and most likely will find it most comfortable worn down around hips (similar to the Kelty hip strap), instead of resting on the hips. The front hip width will determine the frame size (width) required, and thus will limit pack size. Below 10" requires small. 10" to 11" can use small or medium. 11" to 12" requires medium. 12" to 13" can use medium or large. Above 13" requires large.

If in doubt over where to measure, just give us all the measurements you can think of with complete description, or diagram to show what they are. There is a wide latitude for adjusting to size, but we prefer to fit you right in the middle of adjustment range. If you are small stand relaxed and have someone measure between the inside of your elbows, with a gap of at least 1" between elbows and sides, and give us that dimension as elbow width. For children, give reasonable estimates of full growth sizes so we can select size to cover growth range. These packs are each custom made to fit. If you have an unusual fitting problem tell us about it in detail, include diagram or photos (with tight fitting clothes, or nude — loose clothes will obscure most everything), and we will do what we can to suit you.

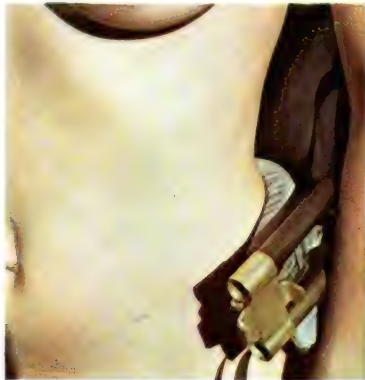
Most tent poles and backpack frames are made of aluminum alloy 6061T6, which has a yield strength of about 40000 psi or 20000 psi where welded. Typical tent poles or pack frame made of 3/4 in. Dia. x .035 in. wall tube thus has a strength of 1650 lbs. Our tent pole and pack frame alloy 7001 has yield strength of 98000 psi., and in our 5/8 in. size, a strength of 2650 lbs. Thus we get higher strength with lower weight!



Measuring Front Girth



Golite Pack on McKinley



**Hip Band,
Support Arm and Buckle**



Pack Hip Band Unit



Golite Pack Colors



Golite Pack Loaded, Bev



Small Golite Pack, Billee

HISTORY OF GOLITE PACK DEVELOPMENT

In 1955 we started overnight backpacking with an old rucksack we had used for many seasons of day hikes in New Hampshire and Vermont. It was fine for the light load of lunch and extra clothes for a day hike, but was miserable with 30 to 40 lbs. needed for overnight or week long backpacking trips. We tried several frame packs, with the most significant improvement being found in the beautifully constructed Kelty pack, with its belly strap for shifting load to the hips. But, while this saved the shoulders, it resulted in sore front hips, uncomfortable pressure across the belly, and backache due to concentrated load in the small of back. The broadest area of the hip tops, at side and back, were completely skipped by that system. We thus started work on a system to put the load on the broad side and back hip area while avoiding loads on back bone, front edges of hips, and belly. The most comfortable design was a rigid moulded fiberglass honeycomb core hip band which was shaped, fitted, and cured directly on the user. This gave a perfect fit for that person, putting the load precisely where wanted, distributed over such a large area that it was hardly noticeable. The major drawback of that was the problem of individually fitting and curing the hip band on the user. Also, the pack could not be used by others unless they just happened to have the same size hips. Examination of several such moulded bands, and various hips, indicated the contact areas were basically two partial tilted circles, which could be matched very closely with padded fabric bands on each side, suspended from a point slightly behind the small of the back and two points just forward of hips and tangent to forward side of hip. A freely hinged side arm, extending from the frame forward of hips provided the forward support and automatically adapted to various hip size and carry locations. This system was put on the "Jack Pack", an aluminum box pack, which we sold from 1957 to 1961.

One problem I repeatedly had in the Sierras was various small rodents chewing into my pack to steal food, even when the pack was hung from a tree with thin cord. The solution to this problem was to make the pack out of sheet aluminum. An aluminum box, with several small inside shelves, and doors in the back, built with approximately same dimensions and volume as a medium Kelty pack, served both as frame and container. This was referred to simply as Jack's pack, later shortened to "Jack Pack". In use it was found to provide many advantages over the fabric packs: 1. Rodents couldn't steal food; 2. Being rigid, it was far easier to pack; 3. Access thru back made it easier to find things; 4. It stayed cold inside due to reflection of sun; 5. It would stand by itself, forming an excellent camp cupboard and stove wind screen; 6. It protected contents from impact damage; 7. Far more durable and wear resistant. It had two major disadvantages though: 1. It was difficult and expensive to make, and 2. Many people would not accept it as a back pack because it did not match their concept of what a backpack looked like!

By 1961 we'd gotten involved in many other activities, so dropped the time consuming pack production, and attempted to get Kelty and A-16 to put the hip carry system on their packs. Kelty didn't believe he could raise prices enough to cover the increased costs, although he liked the greater comfort.

A-16 did adapt to a hip carry system, but not quite the one we had such good success with and showed to them. Their system, using rigid suspension points directly over the hips, tends to place the load too far forward (which acts to tilt hips forward and pull back more on shoulders), and will bump the hips if there is any rise and fall of hips while walking. Hikers with very rigid hips will have no trouble with that system, but flexible hips, as many fellows and most girls have, will end up with sore spots and bruises directly under hip band attach points. At least four other copies of the A-16 form of hip carry are now being produced. Three of them Sunbird, Alpenlite, and Universal, were designed by ex-employees of A-16, who found the breakup of A-16 company due to some financial problems gave them an opportunity to go out on their own and incorporate design improvements they could not do at A-16. The Sunbird offered much greater strength and easy adjustability, plus a belt suspension which reduced hip bruises, but at a cost of much higher weight and price. The Alpenlite utilizes a much more efficient structural design, far lighter weight and greater strength, but lacks Sunbird's adjustability. Jan Sport recognized the problem of misplaced load point, so put more adjustment points on their copy of the A-16. But, their grotesquely distorted frame, technically false advertising, and obviously improper advertising implying they are the first and only ones producing a wrap around hip carry which works, would lead one to suspect they really don't know what they're doing, and cannot be trusted. Copying is the sincerest form of compliment, but to claim their copy is original, or first, is most ridiculous.

By 1970 business growth forced me to make this a full time business, and leave aerospace engineering. The growing number of complaints about other's wrap around hip carry packs, resulting mostly from the wrong people trying to use the available ones, convinced me it was time to produce another pack with the true hip carry system, used on the Jack Pack. Experience with the ultra high strength 7001 aluminum for our tent poles showed we could make stronger and lighter weight frames than commonly made from the much weaker 6061T6 or magnesium. Also, years of experience with sleeping bag stuff sacks, which are carried on the bottom of most packs where they get more abrasion than the pack sack, showed that most packs are made of fabric more than twice the weight needed. Newly developed aluminized coatings could provide sun reflection similar to the aluminum box Jack Pack, while

use of three way zippers could give similar back access, thus allowing full access to contents, while the bulkier sleeping bag was on top. The Go-Lite pack was thus developed and put into production. Since some people want absolute minimum weight for back packing, while others want maximum ruggedness to withstand the rigors of hitch hike-bus-train-airplane touring or bushwacking, we decided to produce the frame in two weights, and the sack in three weights. The heavy weight frame and sack will exceed the strength and wear resistance of most other packs. The light weight frame and sack is about half the weight of other packs, similar in strength to most light frames available, and more than adequate for all normal backpacking with loads up to 40 lbs. (Loads of 65 lbs. have been regularly carried with the light frame, and our standard demonstration consists of loading it with 150 lbs., but we still recommend the heavy duty frame for loads over 40 lbs. Only the lightweight sack is available with aluminized surface, since this feature is most desirable for high altitude back packing where sun exposure is greatest and lightweight is most important. The 5 oz. and 7½ oz. sacks are made in various colors, to suit your wishes. The pack fastens to frame with 8 large snaps, so it is practical to have both a lightweight and heavy duty sack for different uses, and rapidly interchange them. For airline travel, where pack frames are likely to get damaged if checked, the sack is quickly snapped off and checked, while frame is carried aboard. (This was done on our trip to Japan, to investigate zipper production and new designs. Our luggage consisted of Go-Lite packs, and was far easier to carry about than normal suitcases, frames were snapped off, folded flat, and carried aboard.) Despite very little advertising, many packs were sold during 1972 and 1973, and used all over the world. We had some early problems with adhesive bonding of bright dipped anodized parts. (In fact, it was found that, in a pack which had been in regular use during many conditioning trips, then used for a McKinley climb, carrying loads of 70 lbs., all of the joints could be easily pulled apart by hand! The sack and harness held it together). This adhesive problem was easily solved.

Padded shoulder straps are used on most packs to provide the upper forward balancing support, and to take some of the vertical load when desired. These straps never seem wide enough to spread the load comfortably over one's shoulder, yet always seem too wide where they pass under one's arm. Girls especially find their light shoulders, with very little muscular padding, get sore from strap pressure, while the wide straps will press and rub the sides of breasts. Ideally then, one would want a wide, flexible pad over the shoulders, which narrows down to a thin strap under the arm. This we accomplished by using a soft nylon mesh vest fastened to ½" side straps which form a catenary curve and fasten in the center just below the collar bone. The vest extends over the shoulders and partly down back, where it is fastened to a catenary curved rear strap, which buckles on each side. Taking up on these rear straps will shift any desired amount of lifting load directly to tops of shoulders. Cord lacing, to nylon web loops, sewn to vest at shoulder top, transfers the pack balancing load from pack to vest while allowing the vest to follow the exact shape of your shoulder.

The net vest unit has worked beautifully, although we have had some problems with mail order customers who either gave us incorrect sizing information, or would not follow proper adjustment procedures. New sizing instructions in brochure, and improved fitting instructions seem to be reducing that problem to a minimum. We can build them with enough adjustments to allow a perfect fit, but the customer must make use of the adjustment features to achieve that perfect fit.

The sack is divided into two main center compartments and four smaller side compartments. Three way zippers open center compartments, while the side pockets are opened with one zipper across the top and one down one side. The overall dimensions are similar to most other packs, but, by enclosing the full volume available within those dimensions and using internal dividing panels, the useful carrying volume is much greater than any other packs. Many customers request the maximum possible volume. This we provide, although we note that most people report going out with ½ to ¾ full packs!

WIND CHILL FACTORS

Don't get misled by all the false information being repeated about wind chill factors. The most important thing about published wind chill factors that others repeatedly fail to mention, is that they apply *only to bare skin exposed directly to the wind*. The air temperature does not change when the wind blows, but the *insulating* effect of the surface boundary layer of air is drastically affected by wind velocity. When that boundary layer is your only insulation, as it is with bare skin, then any change in it is a direct change in your *total* insulation. One way to *express* the change in cooling rate, of bare skin, as wind velocity over it increase, is to state the air temperature that would be required to get the *same cooling rate in still air*. The surface boundary layer insulation, in air, is generally equivalent to about 1/16" of insulation. Thus, if you were wearing clothing 15/16" thick, the *effective* insulation in still air would be 1" thick, while in a high wind it would approach 15/16". Thus the same wind which takes away nearly *all* of your insulation on *bare skin*, can only remove 1/16 of your insulation when you have 1" of clothing, or, with 2" of clothing, 1/32 of your insulation could be lost. In a 5" thick sleeping bag, all the wind could do is take away 1/80 of your insulation! This of course, relates only to how it affects surface boundary layer insulation, which is all that is referred to in



2RS, In Himalayas, Everest



Storm Hoods — Colors Vary



Back Pack Boat



Mitts and Gloves



Clean Sport



Poncho, Neck Vent Open

wind chill factor charts. If your outer clothes are not wind tight, or you leave openings for wind to get inside or under your clothing, then a far greater amount of insulation could be lost, but *never* as much as some people have believed from wind chill factors. If you wish to avoid severe frostbite, it is essential that you understand the above! The whole reason why the military derived, and published wind chill charts is *because of the vastly different effects* wind has on bare skin compared to a clothed person. When you are fully clothed, with thick mitts on, you will not feel any effects of very high wind. From experience you may know you can work for a given length of time, at that given temperature, with bare hands. Since the wind has had no noticeable effect on you when fully clothed, you are then tempted to remove your mitts to do a particular job bare handed, but *watch out* — If the wind is high you could severely freeze your hands before you're even aware of it. So remember, wind chill applies to bare skin — the higher the wind, the greater the apparent temperature difference there will be between clothed and unclothed. The amount of insulation you need does not change significantly with wind strength (alho, to assure the insulation you have will work, the outer surface, and all openings must be wind tight.) — Personally, I think the manufacturers who have intentionally tried to delude their customers into buying thicker clothing and sleeping bags by falsely presenting wind chill charts, are grossly dishonest. Since they are also mostly the same ones who have relied on that grossly inaccurate army quartermaster corps chart of insulation thickness needed versus temperature, at least their equally dishonest presentation of wind chill charts will tend to counteract that bit of misleading advertising. But, in so doing, they have negated the whole reason for determining and presenting wind chill charts, and are likely to induce people into doing the very thing the charts were designed to prevent. It is possible that those who have so grossly misused the wind chill charts are actually so ignorant, that they don't realize what they've done. I do not believe that, but, if that really is the case, would you be willing to believe anything they said about their products, or your needs, if they are that ignorant?

Storm Hood - Face Protector

We now have available a storm hood face mask that is really comfortable, can be easily fitted for visibility and breathing, and provides excellent face protection from hard driven snow, sleet or hail. When not in use as a face mask, it rolls up into a neat knit watch cap. The main body of it is knit, with the face cover made of soft terry cloth foam laminate. An insert nose cover allows it to fit snugly with easy breathing without fogging goggles. The bonding of foam to cloth prevents raveling, so the eyes and mouth openings can be easily adjusted with scissors to suit. The weight is only 2 ounces, and price is only \$4.

MITTS & GLOVES

After a long search, we finally found good lightweight warm mitts. These have leather palms, water repellent nylon backs, foam insulation, and soft fleece inside. Long cuffs and elastic wrist assure complete seal with parka sleeves.

For all mitts or gloves include tracing of your hand for proper fit.

Over mitts weigh 6 ozs., cost \$9.00
Acrylic-nylon knit gloves with soft leather palms, ideal for dress, mild weather, or as mitt liners. Weight 2½ ozs., cost \$5.00

Soft cape leather gloves with thick pile insulation. THE warmest glove. Weight 7 ozs., cost \$10.00

BACKPACK BOAT — OR BATHTUB

Ever wish you had a boat on those high mountain lakes? Now it is possible. We now have a durable nylon 2 man inflatable boat which weighs only 5 lbs.! The material, and construction technique are identical to those used for aircraft livevests and lifeboats. Very light oars or paddles are included. With this you can safely and comfortably fish any mountain lakes, and the weight is less than what you've saved by using WARMLITE tent and sleeping bag!

This boat also solves the problem of how to take a comfortable bath in the mountains. Merely partially inflate it, place on a soft grassy spot, add water and let the sun warm it, for a nice warm bathtub. You can thus wash both you and your clothes, without polluting the lakes or streams.

Included is a full separately inflated floor which greatly stiffens the boat, insulates your bottom, increases safety, and serves as a ¾ length air mattress. A unique rapid inflation system is included.

Total price \$110.

PONCHOS: We are now making ponchos which give you at least 5 advantages over other ponchos now available. Fabric used is aluminized urethane coated light nylon which is reversible so the reflective side can face you for maximum warmth or can face out to keep you cool in warmer weather. The hood is made with a face opening large enough to slip over your head to permit use with a separate hat if desired. A visor is fitted to the hood to keep rain off your face. A draw cord holds the hood to your head without closing tight around your face. A large V neck allows good ventilation to keep you from getting soaked in your own sweat. Velcro tabs hold sides together when desired. The loops on corners allow it to be suspended as a sun screen or rain shelter. 100 inch is long enough to come below your knees, cover your pack, or serve as ground cloth for sleeping bag. 12 oz. weight makes it about the lightest available.

Price is \$20., which is about the same or cheaper than most heavier, less versatile U.S. ponchos, and outrageously expensive compared to some crude imports.

MATERIAL:

We'll sell you the materials we have on hand, but only on a no return basis, due to high handling costs and the loss involved in cutting fabric. Fabric widths vary from 37 to 54", but, unless stated otherwise, the prices are based on 45" width. If a different width is sent, yardage will be adjusted to yield same fabric area. PLEASE be very specific about color (and 2nd choices, if any), and width, if it must be a particular width. Weaving defects are quite common, and any defects will be compensated for with extra yardage. If you can use short pieces, please state acceptable lengths. Our sealant is very effective for sealing seams in coated fabrics or for rewaterproofing same. Put on porous fabric an excessive amount is absorbed making it heavy and stiff. This stuff will cure in the bottle in 2 months unless wrapped in aluminum foil and kept cool.

Fabrics: Porous 1.2 oz. sleeping bag, red, blue, green.....	\$3.00
Vacuum aluminized	\$3.00
Coated tent outer, 1.6 to 1.9 oz. green, yellow, light blue dark blue, or brown.....	\$2.80
Coated, vapor barrier for bag or clothing interior, dark blue, yellow, light blue or white.....	\$2.80
Same, but with durable aluminized finish.....	\$3.00
We do not stock poncho fabric or back pack fabric.	
Mosquito netting, nylon	\$1.60
#5 coil zipper normally available in 25", 40" (closed end) 76", 90", sometimes 115", per inch.....	.03
#5 delrin tooth zipper, 40" closed end.....	\$1.25
34" two-way jacket zip, separating.....	\$2.00
Urethane sealant, 4 oz.....	\$1.90
8 oz.....	\$3.00
Cord locks, small 3/32" line.....	.20
Large 1/8" link.....	.40
Nylon braided cord 3/32" per foot.....	.02
1/8" per foot.....	.03
Tent pole sections — Model 6 front, 7 or 8.....	\$2.40
Model 6 rear.....	\$2.00
Joint sleeves, any.....	.30

Guarantees, Repairs, Returns:

Have you noticed how often junk merchandise is advertised with such terms as "15 days free trial", or "100% money back guarantee", to entice you to buy? These offers are made to convince you the goods are excellent, as advertised, so you'll order them. But, hasn't it also occurred to you that if the goods are exactly as advertised, then there is no need to offer a return or refund privilege, since the customer will know exactly what he is buying when he orders. Those retailers have discovered that most people will not bother to return anything, no matter how defective, so, they entice people to buy with glowing advertisements and "100% refund" claims. The few who return items simply get their money back with no questions asked. That model is soon discontinued, for a "new, improved" one, before enough are sold for the word to spread about its defects. Now, how does that affect us? For years we offered 100% money back, if not satisfied, which was kind of a meaningless offer, since no one ever returned anything. But then, we started to get a few strange returns: a guy would order a tent, be in a real panic to get it for a long trip, so we'd send it several weeks early. Three months later we'd get the tent back, obviously used, asking for his money back "because it leaked in one seam", with some comment he'd only used it once or twice. Another would get a sleeping bag, have it for a summer, then return it for his money back, claiming it failed to keep him warm at some ridiculous temperature like 45° F. (While we have hundreds of claims from customers of being warm at -10° F. to -60° F. for that model). Another would order a sleeping bag, with unusual color combination, and a girth and height combination never before or since sold, then immediately return it for refund, saying thanks, but he was just looking, and really didn't need a bag. All of these were absolutely ridiculous. In all the years we've done business we've only had one legitimate return, and that was a tent, given to a guy as a gift, which he didn't need. It is thus obvious to us that offering refunds on returned merchandise serves no useful purpose for us or legitimate honest customers, but is simply a gimmick used by retailers of junk merchandise to prevent a public howl of protest from those customers who might object to such junk. We will thus continue our 1973 policy: no refunds. We will allow exchange, within 10 days, of items for a different size, model, or color, of the same type of item, but with the restrictions that the customer pays shipping costs both ways, and we will not accept returns for full exchange credit on unusual sleeping bag sizes (especially under girth or over length bags) or other items with special, customer requested modifications. In those cases, the exchange credit will be based on our costs of modifying the gear to acceptable size or configuration for others, or, the discount we have to allow to sell it, as made, to some one else.

During 1972 and 1973 we had an excessive number of orders for sleeping bags with obviously incompatible length and girth. Generally this was due either to ignoring the girth measurement altogether, and simply ordering the cheapest bag, or, to measuring girth incorrectly (most often with hands together instead of having hands as far apart as elbows, as directed). Occasionally this was due to people not reading, or believing our height instructions, so, instead of specifying their





height, so we could make a proper length bag, they added from 6" to a foot to their height! We have written back to each customer with suspicious looking sizes, to get correct size. But, this is time consuming for us, causes long delays in filling the order, and can cause confusion, and delays with other items ordered. With the additional help now needed to keep up with rapidly increasing sales we cannot guarantee wrong dimensions will be noticed, or that you'll be notified if they are noticed, so you'll most likely just get what you ordered. Thus, I suggest you be very careful to follow instructions *exactly*. And to be sure your order is *complete* and *exactly* as you want it.

We do guarantee that we will correct any defects or deficiencies in any item purchased from us, to insure that it will perform as advertised. If you do find a problem though, *please* write to us first, giving as precise a description of the problem as you can. We have found that most "problems" are not defects in construction, size, or materials, but are simply lack of understanding of how to use, or adjust something, and a simple letter exchange can quickly correct that. Most other problems are so simple to fix that, given proper materials and instructions you can make the repair in half the time it'd take you to pack it for return, and have the satisfaction of knowing you'd done it right! A good example of this is the elastics we put on tent tie out webbing to take up tent expansion. They are not needed at all, but are a nice convenience feature. But, they are very sensitive to the way they're sewn on, and how they're treated, so it is not unusual to have one tear loose along the stitching. If that happened on your tent, you could simply resew the end, or, write to us and get replacement elastics which you could sew on in about 10 min., and always have the tent available for use. If you mailed the tent back for us to fix, you'd probably spend 1/2 to 1 hr. packing it and taking it to post office, and would lose the use of the tent for 5 to 6 weeks just due to shipping time! Occasionally people break a joint in a tent pole due to improper assembly. A simple wrap with tape can keep that joint and pole in service, while airmailing 30c to us will get a replacement joint in 4 days. Yet some people will ship us the whole tent, spend \$6 to \$8 for shipping, lose the use of the tent for a month or more, and pay us \$1.00 for the 30c repair they could do themselves! We do not mind making repairs — they have always been quite quick and simple. But, it does bother us to have people upset with us over the long delay, and loss of use of their gear, when all of that delay is due to shipping, which we have no control over, and is totally unnecessary!

On the other side, are people who have problems, but just assume they are "normal", and that no manufacturer would bother answering their complaint. It may be true that many large manufacturers can't be bothered with minor complaints, especially since 90% of them are not their fault. But, you'll never know till you try, and you'll be pleasantly surprised to find most reputable manufacturer are eager to know your complaints, and will do their best to correct them. The reason it's quite simple, and logical. If we sell a product which generally performs well, and more sales are based on testimonials from users to prospective buyers, then we want *all* the items we sell to give proper performance to all customers. Thus, if an item has a defect, or the customer doesn't understand proper use of it, then we want to correct that defect or lack of understanding *immediately*.

We answer all questions written to us immediately. The only letters we do not normally answer are actually the ones most deserving a friendly reply; the hundreds of friendly, complimentary letters we get every year commenting on the performance of our equipment under various severe conditions. We really appreciate such letters, which make this whole business most worthwhile, but it would be nearly impossible to answer them all.

Another regularly received type of letter is quickly identified: It is very thick (8 to 20 pages), nearly always starting with "Having thoroughly read your brochure, I have a few questions—", which can be translated to say "Having looked at the pictures, I'd now like you to tell me what the words say", since the rest of the letter simply asks questions which are completely answered in the brochure. We have answered such in the past, but, I'm afraid lack of time will soon force us to simply write *READ THIS* on a brochure and mail it back with his letter! So please, if you feel you must write and ask questions, first carefully read the brochure a second or third time, to find those answers. You'll be spared from the stinging humor I save up just for people who can't, or won't read!

STOVES: We do not make, nor sell stoves, but feel there is so much misinformation put out about them in catalogs, magazine articles, and pseudo-research articles to support introduction of a new one, that the public should be made aware of a few very important, regularly overlooked things. 1. The most common way of comparing stoves is to rate them on how fast they can boil a quart of water, and how long they can operate on one tankful of fuel. While both of these factors have some slight significance, they are hardly the real basis for selecting a stove, and the data so presented is generally misleading anyway, since only one of each type stove is tested. If all you're going to do is boil water, then the hotter the stove the better, since a quick boil can decrease the heat lost, and can save you time. But, much cooking consists of a quick heat up then a long simmer. If you can't turn your stove down to a very low heat, you'll waste fuel and burn your food, and end up spending far more time cleaning your pot than you'd ever save from a fast boil (Then *you'll* do the fast boil!). Thus, the *most* important operating characteristic is how *low* a stable flame can be maintained, not how hot it is.

Generally, following directions is a good idea. But, following directions for starting gasoline stoves could be very hazardous, *so don't!* Instead, bring along some solid fuel pellets, or fuel paste. These are widely sold for cooking by themselves, but are rather inefficient that way. Instead of pouring lethal, explosive gasoline in the priming cup, and then getting a big flare which barely heats the gas generator, simply place a small bit of fuel pellet in the priming cup, light it, and watch it put its small, concentrated heat directly on the gas generator. No spilling, no mess, no explosions, no flare ups, no singed eye brows, no carbon covered pots, no repeated starts and failures — just a simple, quick, clean, guaranteed start. Please pass these instructions on to all you know who use gasoline or kerosene stoves.

As for fuel capacity and burning time: The only real significance that has is avoiding refueling in the middle of cooking a meal. If tank size is adequate for one meal (and all the stoves I know of are), then there is no advantage in a larger tank, unless it is big enough for 2 complete meals. Since the tank on a stove must be stronger, and therefore heavier, than a separate fuel container, due to high pressure, the optimum stove and fuel system, weight wise, would hold just enough in the stove tank for one full meal. For extreme cold and high altitude campaign, refueling a gasoline stove can be a real annoying chore, and thus propane or butane fuel stoves are preferred, despite slightly higher weight and much higher costs. But for most other conditions, a properly used gasoline or kerosene stove is simple, clean, safe and cheap.

AIRMAIL

(Lbs.)	Zones 1, 2, and 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
1	\$ 1.25	\$ 1.25	\$ 1.25	\$ 1.30	\$ 1.30	\$ 1.30
1.5	1.50	1.51	1.60	1.68	1.75	1.82
2	1.75	1.83	1.95	2.06	2.20	2.31
2.5	1.93	2.03	2.17	2.31	2.48	2.65
3	2.11	2.23	2.39	2.56	2.76	2.96
3.5	2.29	2.43	2.61	2.81	3.04	3.27
4	2.47	2.63	2.83	3.06	3.32	3.58
4.5	2.65	2.83	3.05	3.31	3.60	3.89
5	2.83	3.03	3.27	3.56	3.88	4.20
6	3.19	3.43	3.71	4.06	4.44	4.82
7	3.55	3.83	4.15	4.56	5.00	5.44
8	3.91	4.23	4.59	5.06	5.56	6.06
9	4.27	4.63	5.03	5.56	6.12	6.68
10	4.63	5.03	5.47	6.06	6.68	7.30

1974 STEPHENSON'S PRICE LIST

No-Sweat Shirt	Small	\$16.00	Poncho	\$20.00
Give shirt size	Med.	16.50	Give hat size	
	Large	17.00		
	X Large	17.50		

Warmlite Triple Bags:	56" Girth	\$140.00
	60" "	150.00
	64" "	160.00
	70" "	175.00

Other girths less than 56" or more than 70"; \$5.00 + \$2.50 x girth.
Airmattress, down filled, for Triple bag, \$35.00 (subject to change anytime).

Go Lite Packs	Small	\$62.00	Be sure to include sizing data,
	Med.	66.00	frame and sack weight, sack
	Large	70.00	color, if unspecified, a light-
Extra sack, any	24.00		weight, aluminum sack will be sent.

Warmlite Tents			
Size (Formerly)	Basic cost	End Liners, add	White or Alum. Top, add
2R (6LR)	\$150.00	\$15.00	\$ 6.00
3R (7LR)	190.00	20.00	8.00
5R (8LR)	240.00	25.00	10.00

Other options: Side windows, (S) add \$20.00.

Dropaway front, (DF) add \$10.00.

Storm Hood, Face Protector — colors variable —

give several choices\$4.00

Overmitts — Foam and pile, nylon and leather

(include hand tracing\$9.00

Acrylic Knit Glove, leather palms (black, brown,

olive) — specify normal or bulk knit\$5.00

Cape skin, thick pile gloves — natural.....\$10.00

Back Pack boat\$110.00

Filmgap liner, 3R size tents *only*, weight 3 lbs. plus 3 1/2 lbs.

of pads, sleeps two, no color choice.....\$250.00



3R on McKinley



Jack Packs, 1963



Model 3, Ericka



Model 3, First 2-Man Tent 1961



Model 1, First Air Gap Insulated Tent, 1958



Lory



3R and 5R on McKinley 10,000' Near Kahiltna Pass



**Model 5, Early 6 Man Expedition Tent
Made 1963, Photo 1970**

Customer Comments

My congratulations on your fantastic design. It is the first tent I have ever had that I have been happy with and I lived in tents for eighteen months. I especially like the attention to small details, such as the glasses pocket, the string thru the poles, which is a great help for putting it up in pitch dark. Thanks much,

C. B. Donhill.

Allow me to congratulate you on such a natural and beautiful way of displaying camping equipment — after all, isn't this the basic reason we all love to camp — "to get away from it all" and enjoy the beauties of nature. Sincerely,

Gene Gradel.

I bought a tent from you last summer. In a severe winter storm over New Years on the San Francisco Peaks Arizona, your #6 tent saved my life. The tent came out ripped because it was stuffed with six people when the other tents blew apart. I'm convinced. Please send me another catalogue. Sincerely,

Mason Skiff.

I'm convinced that anyone who knocks all hip-carry packs doesn't know what he's talking about. He's never carried a well-adjusted Warmlite. All best wishes,

Aaron Shearer.

This is a happiness letter about our 6LR tent. It's withstood several tests, including a night in a super snow blizzard spent in a cemetery inside the Syracuse city limits. (All the roads out of town were closed.) In howling wind we recorded an inside temperature of 28° while it was 80 outside. We secured the front of the tent by excavating the snow down to the frozen earth and screwing in two ice screws. The back line was supported by a horizontal cross-country ski behind two grave stones, one "Mother" and the other "Father." (Yes, it's really true!) On top of all that — literally — huge loads of snow were dumped on top of the tent all night long from a tall tree we'd camped under. The tent? Just like new!

Jim Prior.

I want to thank you for an excellent product. I purchased a Warmlite triple bag this past summer, for use above timberline in the Sierras, and its performance far surpassed that of any other bag I've ever seen. While my friends spent uncomfortable nights, fully clothed in their traditional down bags, I passed the sub-freezing nights comfortably undressed in my unzipped triple. I was even able to lend one layer of my bag to my friends. The trip was terrific — discomfort is clearly not a prerequisite to enjoying the wilderness. Sincerely,

John Friedlander.

The sleeping bags and tent are truly beautiful and indeed, everything your catalog says is true. And I do not hesitate to say that you have given better service than any other camping supply distributor we have done business with. FAR OUT. Without a doubt . . . Sincerely,

Mike & Mary.

"For almost 3 years now we've delighted in the security of your Warmlite tent, and never yet managed to write you a letter of thanks. Belated, but none the less grateful. . . . If you know Tar Toxkeroy Books, you'll take satisfaction in knowing we've christened our tent 'Bagdad.'"

P. L. & P. C.

Altho your claims for your tent sound at first somewhat extravagant, after living in it for a month in the Sierras I have to admit that they are entirely justified. It came thru rain, snow, and high winds completely dry. . . .

W. T.

"Thanks for tent — above and beyond greatest expectations. No condensation problem ever on humid B.C. coast with temp. around freezing."

C. E.

"I didn't really understand, or believe, your reasons for waterproof interior on the bag when I ordered it, but now, after a season's use in all temperatures I'm really sold! I've never been so warm and DRY in a sleeping bag, and I don't wake up thirsty in the morn or the night!" S.W.

Just under a year ago, I purchased a two-man insulated tent from you and used it last summer while bicycling to Nova Scotia. I must say that I am very pleased with it. It's ability to be set up in nearly every location imaginable, its design providing for ease of setting up, great stability and spaciousness once set up, and especially its lightness and compactness when packed make it, in my opinion, the best tent on the market for bicyclists. J.S.A.

"Incidentally, I think you might want to know that my Model 6 tent literally saved one member of a climbing party from hypothermia. We were caught in a storm in a fairly exposed area and were taking wind gusts of 70 m.p.h. With a temperature in the high teens it was COLD to be outside. My friend's typical A-frame tent blew down, leaving him cold and exposed. There were three in mine the rest of the night, and reasonably comfortable at that. Even though the wind shifted 90° and we took it in the sides, we managed to survive. I compliment you again — this time on the strength of the tent — and my friend thanks you." Sincerely,

Richard F. Scott.

I have used both tent and bag both winter and summer and from central Virginia to the White Mountains of New Hampshire. Both have performed to my complete satisfaction. Such performance is clearly born of superb designs that stem from truly creative thinking and a willingness to re-evaluate that which is ordinarily accepted as conventional wisdom. And these designs are implemented with a craftsmanship which to my mind is equalled only in the boots made by Peter Limmer and his sons. Keep it up!

For three years, I have taken your Model 6 through everything from Switzerland's snow to the jungle and sabana of Venezuela. I have carried your whole family with me in that tent and I love you. Far out.

My mother has been so impressed by the extreme durability and comfort of my tent, that she wants one of her own. Thanks,
David Barnes.

I have been living in the tent for the last 6 weeks and it has been excellent. The tent has been through some intense storms, both wind and rain and kept me warm, dry and unworried. Indeed, in the midst of a particularly severe thunderstorm a clap of thunder was followed by a terrible shaking within the tent. For a moment I thought we had been hit, but rather it was a friend's terrified German Sheppard, easily a hundred pounds, who had jumped on the tent. It shook, but it stayed up and when we got the dog off it was fine. Some tent!" M.S.

I have been using your Model 6L tent as a habitation almost continuously since I received it in October. It has been through almost every kind of New York Adirondak miserable weather and has kept me not only sane but quite happy and comfortable. I am extremely pleased that I bought it and consider it the wisest investment that I made. Thank you,

Fad Turner.

"My wife and I are both very happy with our Warmlite triple bags, after using them from late winter to hottest summer. The built-in pad is an excellent concept — it makes the bag sleep like the bed back home on the first night out. I no longer toss the first night or two till I get my sleeping habits straightened out." L.D.

"I purchased both your Warmlite bag and your Warmlite tent: I am so impressed with these quality items that I am now at my wife's urging, purchasing a Warmlite Bag for my wife. J. N.

"The pack trip went off without a hitch and your product is really a beautiful bag. It is the most comfortable sleeping bag I have ever made the effort to climb into. I guess I'll be getting a smaller size bag for my wife, if I don't she's liable to appropriate mine." F.B.T.

"It is the only tent I've been sure that I wanted to own in years of backpacking. It lay on the beach (wrong end into the wind!) like a dignified sea lion, while 25-odd other style tents, flapped, ripped and collapsed! I feel sure that it will do as well above timber line in the Sierras." M.A.C.

"I used the tent almost every day for the last two months. The tent was excellent. It weathered strong winds with only 3 stakes and it went up in minutes. I received many compliments on it from European campers." E.I.

"Ahh, but your tent is magnificent. It really does exceed my already high expectations. It is always a pleasure for me to see something that is really good, and to experience it is even more thrilling. It is an understatement on my part to say that I—as well as the many friends who have seen the tent—are very pleased." R.F.S.

Last May we bought a tent from you (and a parka too) and went off to Africa where we slept (3 of us) comfortable and protected from such sundry things as: freezing cold and rain at Thompson's Falls, 100° weather and 50 mph winds w/dust at Lake Rudolph, damp bug laden country at Nakuru, incredible rains on Mt Kenia, tropical rains and blowing sand at Mombasa. . . . and all through this nothing ever bothered your tent. Plus that it charmed every person we met. . . . all the slick campers of the world are out there looking good and travelling cheap but there we were in your super tent setting it up before anyone else etc etc. . . . you must get a lot of these letters.

HOT TUBS

How to Build, Maintain & Enjoy your own.

by Leon Elder

Photos by Sam Dabney, Tim Crawford
& Wayne McCall.

This describes the origin and bliss of the backyard homemade Hot Tub, a West Coast phenomenon that began in 1958. The Japanese have long had their *furo* the Finns their *sauna*, the mountains their sulfur pools, but this approach to communal soaking is unique. While most tubs are converted wine vats, some have been built of concrete, boulders and glassed plywood. Sections on construction, heating and lighting are included. Plus a gallery of photographs.

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If you're not up to building your own, as described in Leon Elder's HOT TUBS, you can buy a complete system delivered to your site. There are three sizes of new redwood tubs, plus assembled support equipment including a 70,000 btu gas heater thermostatically controlled, a sensational non-media filter in stainless steel housing, and a 1/2 horsepower bronze pump, plus all the circulation pipe and fittings. phone 969-0466

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Recommendations

If you would like to backpack a unique part of our country, the Washington Cascades and Olympics, I would recommend the trips offered by Brad Bradley's Northwest Alpine Guide Service. This friendly family operated service knows the areas and their goal of wanting customers to be comfortable in the wilderness is not just idle talk. Be it Meg's sour dough cookery, Linda's ski touring instruction, Doug's guiding of a mountain climb to fit your abilities or Brad and Margaret's wild flower trips, you will have a time to remember. Write them at P.O. Box 80345, Seattle, Washington 98108 for their latest brochures and tell them Jack sent you. They will share their love of the land and how to preserve it as well as giving you a good trip.

For professional cleaning of down bags and garments: The Down Depot, 431 Belvedere St., San Francisco, Ca. 94117. Will accept items by mail. Phone (415) 664-4313

In Los Angeles: The Sands Cleaner, 4321 Magnolia Ave., Burbank. (213) 846-7195.

For mountaineering, training and guide service in the bay area, contact Tony Sottile, 145 Marguerite, Mill Valley, Ca. 94941.

If you want durable, no stretch crampon straps and snow shoe binding, write to Bruce Beck, Box 3061, S. Berkley, Ca. 94703.

For the very best custom made boots write to Peter Limmer & Sons, Intervale, N. H. We understand there is a long waiting time, but it is well worth while to get perfect fit, and superb design and construction.



Recommendations

Publications of interest:

- New Earth Catalog*, GNU Publishing, Box 6820, San Francisco, Calif. 94101. \$4.
Climbing Magazine, Box E, Aspen, Colo., 81611. \$4, 6 issues.
Off Belay, 12416 169th Ave. S.E., Renton, Calif. 98055. \$6, 6 issues.
Summit, P.O. Box 1889, Big Bear Lake, Calif. 92315. \$7/year.
Signpost, 16812 36th Ave. W., Lynwood, Wash. 98036. \$7.50/year.
Appalachia, Appalachian Mountain Club, 5 Joy St., Boston, Mass. 02108. \$10/year.
Better Camping, 500 Hyacinth Place, Highland Park, Ill. 60035. \$6.50/year.
Wilderness Camping, 1255 Portland Place, Boulder, Colo. 80302. \$4/year, 6 issues.
Canoe, Suite 3200, Tribune Tower, 435 N. Michigan Ave., Chicago, Ill. 60611. \$4.50, 6 issues.
Soaring, SSA, Box 66071, Los Angeles, Calif. 90066. \$15/year. Includes membership in SSA.
Ground Skimmer, U. S. Hang Glider Association, 12536 Woodbine St., Los Angeles, Calif. 90066. \$4/year.
Pacific Wilderness Journal, Box 22272, Portland, Ore. 97222. \$3, 6 issues.

Sources of Back Pack Gear

- | | |
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| North Face
Box 2399 Station A
Berkeley, Calif. 94702 | Quality gear — top workmanship |
| Frostline
Box 9100
Boulder, Co. 02215 | Good kits — excellent, easy to follow instructions. |
| Eastern Mountain Sports
1041 Commonwealth Ave.
Boston, Mass. 02215 | Excellent source all kinds of equipment, most makes — good comparative data. |
| Sierra Designs
4th and Addison St.
Berkeley, Ca. 94701 | Well made gear — a bit behind in designs. |
| Holubar
Box 7
Boulder, Co. 80302 | The pioneer in quality mountain gear — a bit behind now. Also kits (Carikits). |
| Recreational Equipment
1525 11th Ave.
Seattle, Wa. 98122 | Co-op — wide selection of low to moderate price gear. |
| Ski Hut
1615 University Ave.
Berkeley, Ca. 94703 | Fair quality mountaineering gear. Old designs. |
| Gerry
5450 North Valley Hwy.
Denver, Co. 80216 | |
| Alpine Designs
Box 3407
Boulder, Co. | |
| Peter Limmer & Sons
Intervale, New Hampshire | World's finest custom fitted boots. |
| Bruce Beck
Box 3061
S. Berkeley, Ca. 94703 | Top quality crampon and snowshoe bindings. |

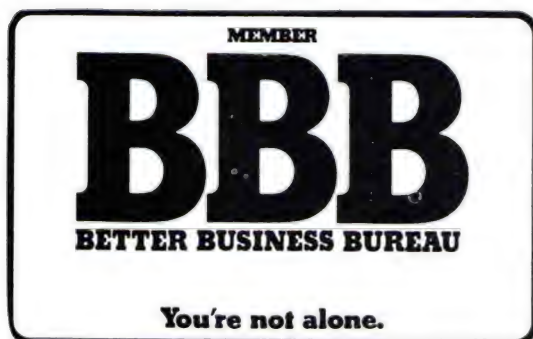
Mountain Gazette



Rozinski photo

"As I walked slowly over the grass, the sun shone out enough to show the shadow moving with me. Somehow I seemed to get identity with each and everything around me, in its condition... Nature was naked, and I was also..."

— Walt Whitman



Mountain Gazette is a monthly magazine about climbing, skiing, hiking, touring and other benign uses of the mountains. In it you'll find writing of a high quality—honest, "naked," straightforward. You could call it a monthly catalog of mountain experiences.

A subscription to Mountain Gazette is \$6 for one year (12 issues), \$9 for two years (24 issues) or \$12 for three years (36 issues).

Mountain Gazette 1801 York Street Denver, Colorado 80206



Entrance to 5, Laura



1955 Stephenson Camp

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710-711.	6
712-717.	7
718-719.	6
720-725.	7
726-738.	6
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893-898.	4
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926-928.	1
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936-939.	3
940-949.	3
950-953.	3
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You seem so happy in your advertising brochure.

Second my triple sleeping bag is just fantastic!! I was warm all the time even at -40°F with only a tent between me and the out-of-doors. The warmth and the light weight were beyond all expectations!!

THE TENT IS THE FINEST I'VE OWNED BAR NONE. I'm VERY HAPPY WITH IT.

THE 5 POUND BOAT HAS BEEN A JEWEL. ONCE, IN SOUTHEAST ALASKA, HAVING THE BOAT IN MY PACK SAVED US FROM BEING STRANDED AND PREVENTED THE POSSIBLE LOSS OF A FRIEND'S FISHING BOAT.

I finally had a chance to test out my triple; it was -20 and I only used the Rich one - with no hat or other protection.

FANTASTIC.

Someday the rest of the world may start finding out what's happening.

My wife and I bought 2 of your ponchos last Spring. We used them much in Greece (raining) and Israel (not raining but sunning) I have to tell you, they are outsize! Actual reading under makeshift shelter on Negev desert in Israel was 83°F. The air temp. was 109° in the surrounding area.

Nov 12, 1973

Dear Friends,
It's been 2 1/2 years now since I bought my Warmite sleeping triple bag from you for my summer on Mt Logan (19,850') in the Yukon of Canada. We had terrible weather that summer where it often averaged -20°F (and where -40°F was a common experience) and where 0°F was really warm. In that land of endless cold, a good sleeping bag was really a life-saver and I used to be kidding a lot because I often would say in my sleep, "my bag is really warm!" - I guess the contrast between cold and warm was one of the sharpest distinctions I had ever known. After Logan I didn't have to retire my bag like the others up there because it works well in warm weather too - and those heavy expedition bags are only good if it's really cold. In the years since, my bags' been everywhere in all kinds of weather and I have become slowly very sold on your unique design - it's nice to see someone's thinking these days.

My wife and I are both very happy with our Warmite triple bags, after using them from late winter to hottest summer. The built-in pad is an excellent concept - it makes the bag sleep like the bed back home on the first night out. I no longer toss the first night or two till I get my sleeping habits straightened out.

P.S. - Your tent has been my pride and joy - I think I'd even fight off a mama bear with him to keep it from being damaged -

There is a real Stephenson! Although your far-flung reputation as the Wizard of Backpacking made us a bit timid about imposing on you, we left your house as much reassured by your kindness as we were dazzled by your know-how.

My sleeping bag has traveled about 20,000 miles since I received it in March. In everything from desert conditions in the Grand Canyon to new mountain climbing conditions in Rocky Mountain Natl Park (11,500 ft) to severe winter in Utah (in March) at about 10° below zero. In rocks, sand or wet ground and on top of snow. In the rain and in dry weather. It has yet to fail to give me a good night's sleep. It has been my greatest comfort in journey. It has been my only bed since mid-April, and I've not really longed for anything (unlike many of my friends).

I feel my Warmite bag has

contributed much to the success of my trip.

I've liked with a lot of people who felt \$50 was an outrageous price to pay for a sleeping bag but they somehow never look very rested in the mornings.

Once again, my most sincere, heartfelt thanks for producing the best damn sleeping bag in the world!

As I often seem to be in the wrong place at the right time; getting blasted by the weather, your tent has kept me dry, and your bag warm. The tent has easily withstood winds and gusts I'm afraid to estimate. I've slept in the triple to about 10 below - with the top open. It is really warm and dry. I don't think I could find a better tent and bag anywhere. What's really a relief is there's none of the insane flapping like that of other tents.



THE SEVEN STALWARTS OF VAGMARKEN

Left to right:
 Bud Ford
 Dave Campbell
 Jack Hawley
 Horace Ory
 Fred Camphausen
 Tom Park
 John Otter



Base Camp



Avalanche Off Mt. Hunter



Climbing Route and Camp Sites



Hanging Glacier Opposite Base Camp

MINUS 90°

A Daily Journal of the Life and Times
of the

1973 VAGMAKEN MOUNT McKINLEY EXPEDITION

(16 June to 7 July, 1973)

In Which There Is Contained
NOT ONE, BUT TWO Shreds of Truth
Concerning This REMARKABLE Adventure
Undertaken by

THE SEVEN STALWARTS OF VAGMARKEN

And to Whom

This Journal Is Reservedly Dedicated
by the

Renowned Author and Lecturer

Fred Camphausen

on this

The 31st Day of September, 1973

CAUTION TO THE READER

This document is an executive summary. It is intended to present the higher management level personnel with a quick executive level overview of the results of the Vagmarken Mt. McKinley Expedition in a few hours reading time. Necessarily, the information presented is highly capsulized, and in many cases represents only a sample of the deeds and misdeeds of the Vagmarken Expedition members. The complete deeds are found on the first ¼ page of Volume II and the complete misdeeds are found in the remainder of Volume II through Volume XXVII of this report. These volume numbers are classified documents and, accordingly, must be destroyed before reading.

MINUS 90° FOREWORD

Some Vagmarken¹ member started the whole thing 3 years ago. In all likelihood a facetious remark was voiced, (in the tradition legitimized by the Vagmarken motto²) which stirred the imagination, and the idea grew. Five individuals were thus infected at this early time, to be joined by two more during 1972. Within this small group the ambition flourished: McKinley in 1973.

Mt. McKinley³ . . . in Alaska; the highest peak in North America. A worthy goal, indeed. This mountain must be conquered by Vagmarken.

The conquest would be accomplished by a handful of Southern California's most ardent climbing activists; a veritable honor roll among mountaineering lights. Permanently engraved within the Valhalla of conquerors were to be their names, and we note in parentheses the expedition responsibilities of each⁴:

Dave Campbell	(equipment)
Fred ("Campy") Camphausen	(rescue, medical, and latrine)
Wayne ("Bud") Ford	(food, Steffy)
James ("Jack") Hawley	(Spanish linguistics)
Horace Ory	(public relations with the Sierra Club)
John Otter	(food)
Thomas ("Tom") Park	(equipment and correspondence)

By the unanimous approval of the conquerors, Jack Hawley was appointed Conquer in Chief.

By mid 1972, their ambitions had galvanized into determined action. They began to hold planning meetings. Weekend training ascents of prominent Sierra Nevada peaks were fervently undertaken. Great stocks of food, equipment, medicine, and other essentials were procured. The most complicated and time consuming tasks, involving the sorting and packing of food and gear, and making the wands, were postponed until the penultimate pre-departure weekend in order to add interest and excitement to the final week.

An important group training exercise, attended by all except Jack⁵ and Horace, was held on the Palisade Glacier during the Memorial Day weekend (26-28 May) to check out new tents and other gear, and to practice team rescue skills. Donna Park and Steffy Buell were along. Jack was at this time climbing in the Sierra Guadarrama in Spain.

This journal begins, however, on 16 June, the day the 1973 Vagmarken Mt. McKinley Expedition team departed for Alaska. It recounts the experiences and daily accomplishments of the team from its takeoff from LAX to its return to Anchorage in early July. Recorded herein are both the team's triumphs and its pitfalls, which recalls to the writer of this journal the appropriateness of submitting at this time a suitable disclaimer.

It would not be unreasonable to suppose that these writings may, at some future time, fall into the hands of another expedition group, and be called upon to serve as a guide; a beacon light so it were, illuminating the way toward the effective planning of a later climb of this near-Arctic peak. The gentle reader is herewith cautioned, however, that this supposition is fraught with danger most grave, for to be revealed are successes, but also our mistakes. Two important axioms are submitted: (1) When Vagmarken make mistakes these are not half-faced mistakes; and (2) the occurrence of mistakes and non-mistakes are not necessarily mutually exclusive events. It may be true that, for those events that are mutually exclusive, the attributes "success"- "failure" are apportioned roughly half and half, but this will lead to inevitable difficulties in interpretation for the non-Vagmarken; viz., he cannot detect which half were the successes and which were the failures.

And we aren't going to tell.

FOREWORD

PROLOGUE

DAY 0 TO DAY 24..... Page 1
APPENDIX Page 27

PROLOGUE

When I first saw her she was sewing up the sides of a stuffsack. In a dingy corner she sat, bent over her time-worn machine, making a stuffsack. She chanced a fleeting glance toward me as I entered the shop. Our eyes met. For an instant our eyes met, hers and mine, in this dingy shop. Her eyelids fluttered almost imperceptibly; she sighed, then her tired hands resumed their labors, sewing up the sides of that tiny sack.

All around her feet they lay, these little yellow stuffsacks, made by her trembling hands for purposes she knew not what. "Vagmarken 1973 Mt. McKinley Expedition" they were labelled, but what meaning could this hold for this poor girl who worked there in the early morning hours, weeping softly in the shadow of her giant Singer machine. Suddenly Tom, her master swaggers in. "Make the next one x inches in diameter by y inches long"¹, he bellows. "I'll need to store this one for the duration", he adds, cursing through his beard.

Donna, oh Donna. How can I rescue you from these tiresome labors?

Making stuffsacks.

These goddam little puke-colored ditty bags.

I give up. I think I'll go to Alaska and climb a mountain there.

1. Tom will have to supply the details.



Aerial View of S.E. Fork of Kahiltna Glacier



Tom, With Handicap



Entering the Kahiltna Hilton



1. What Vagmarken members call themselves, derived from *Vagmarken* (Trail Markers), the title of a book written by Dag Hammarjöld. In more serious conversation, "Rockeddyne Mountaineering Club" is sometimes used, although the origin of this name is somewhat more obscure. Vagmarken also call themselves "Yetis".
2. "Harassment with Dignity".
3. Having also the Indian names "Denali" and "Traleiko". Legend has it that "Denali" is the name favored by Alskans. Its use in conversations with the local natives failed to elicit understanding, however, and it was thus replaced by the more cosmopolitan "Mt. McKinley".
4. Dan Levack, a non-expedition Vagmarken with a talent for embezzling, took care of the expedition financial management.
5. Jack Hawley didn't attend anything. He was incommunicado since October 1972, purportedly in Madrid, where he was allegedly building an atomic power plant. The other expedition members did not investigate to confirm this; Vagmarken do not wish to pry.

Saturday 16 June, Day 0. Departure from LAX, We Tour Anchorage with Dave Rogers

Thoughts of poor Donna (and of other broads left behind) lingered on, clear until the six stalwarts of Vagmarken stepped aboard the plane and snapped closed their seatbelts in preparation for their 0730 hrs. departure. Bud Ford recalled that he had, without ceremony, discarded the valuable mailing envelopes for 20 rolls of Kodachrome film in John Otter's trashcan. John remembered, however, that the trash hadn't been picked up yet¹, so perhaps . . .

Western Flight 719 departed on time and the fully loaded Boeing 720 flew to Portland, then it continued on its way to Seattle-Tacoma. At 1130 hrs the airliner was again in flight, winging its way on the final leg of its journey to Anchorage. A continuous sea of clouds far below was penetrated by the loftiest of the Chugach peaks, and Mt. McKinley could be seen in the distance. After descending to a successful landing² at 1220 hrs local time³, we recovered the 32 pieces of personal gear, expedition food, and equipment duffels from the baggage conveyor. We had lucked out at LAX; all this junk passed through with VIP tags attached and no excess baggage charges were assessed.

Dave Rogers was at the airport to meet us. He recognized us at once as we filed into the terminal. He dropped his bouquet of flowers and began to run away, but we grabbed him. Dave Rogers and Frank Ashley were friends. Dave didn't know what a Vagmarken looked like but his friendship with Frank Ashley was sufficiently strong for him to say "Sure, I'll give them a helping hand when they get there, but how will I know a Vagmarken when I see one?"

Dave Rogers found out. Like I said, Dave Rogers and Frank Ashley were friends, once. We hauled our gear to the front of the terminal and tried to look unconcerned while an airport security guard eyed us suspiciously. Our attempt to find a truck to rent failed and we reconfirmed our plan to take the next train to Talkeetna, departing tomorrow morning. An hour after we landed, Jack Hawley flew in from Spain via Air France. He had a beard; we wouldn't have recognized him without his castanet earrings.

We allowed Dave to do many things to make us feel at home. We started out by taking over his boss' house. It required 3 trips in Dave's car to take us there. By advance arrangement, Dave had already procured 20 gallons of Coleman fuel for the Vagmarken stoves, very reasonably priced at \$1.19 per gallon. Dave now had a very strong Vagmarken immolation urge, i.e., pour the 20 gallons over them and set them afire with a match. No, not really. That came later, after we invited him to drive us around Anchorage to pick up the two-way radio, be interviewed by the local newspaper, buy a pair of Korean vapor boots, visit a mountaineering store that had a going-out-of-business sale, procure basecamp food, and finally, find empty cardboard cartons to carry all this stuff in. Dave then brought us to the Anchorage Westward Hotel to eat strange shapes that leapt out of the ocean that morning.

Sunday 17 June, Day 1. Train to Talkeetna and Flight to Base Camp-7, 250 ft.

The sunny Anchorage morning found Dave once more driving the 7 Vagmarken, this time, to the train station, in 3 trips. The Alaska Railways Aurora Streamliner (locally known as the "Moose Goose") was being assembled as we collected at the depot. We piled all our gear, now 36 pieces, on a single baggage cart. Dave had a big smile on his face when he brought the final load of Vagmarken to the train. We bought round trip tickets to Talkeetna, setting us each back \$10.25. We said "Dave, see you when we all come back". Dave's smile went away. Our baggage fit nicely in the baggage car of the train, with a little room left over. We saw Dave leave for his car. "Our thanks go to you, Dave; Frank Ashley's ex-friend and Vagmarken den mother."

Departing the station at 0930 hrs, the Moose Goose slowly passed through the suburbs of Anchorage, then turned gradually Northward along the Susitna River toward Talkeetna. The Vagmarken gave rapt attention to the lakes and the forests from the domeliner windows, or to the travel agency girl who had been sent along to keep John Otter company. Tom sorted expedition cover envelopes⁴. Just south of Talkeetna, the train made a special stop so that we could take good pictures of Mt. McKinley and its companion Mt. Foraker. The weather was sunny.

After a 3½ hour train ride we arrived at the small Talkeetna depot. We off-loaded our gear and Cliff Hudson, our bush pilot, soon arrived to meet us. He asked us to load the gear into his pickup truck, and he drove it the short distance into town. Steve Hackett, a National Park Service Ranger, was waiting at the Roadhouse for us to come, in order to pass on the latest information: which parties were on the mountain, what snow conditions to expect, how many wands were advisable, etc. Mainly, I think, he just wanted to see what Vagmarken looked like. He asked us for a standby at 17,300 ft. for a possible airdrop of the Sierra Madre SAR Team rescue capstan and rope. This still has not been emplaced⁵. We had lunch at the Roadhouse, which was cooked over a wood burning stove.

Cliff had, meanwhile, taken our gear to his log cabin adjacent to the older of the town's two landing fields. We set to the task of repacking personal gear to make ready for our flight to the glacier, the weather being stable and quite warm. Excess clothing and 200 of our 500 wands were stored in the cabin and our wallets were given to Cliff for safekeeping in his refrigerator. We finally drove the pickup with its load of gear a short distance east of town to Cliff's Cessna, which was parked at the new FAA airstrip. Jack and Campy loaded their gear aboard for the first flight to the Southeast Fork of the Kahiltina.

Takeoff was at 1515 hrs. The flight was in clear weather transitioning to mid-altitude fracto-cumulus near the mountains. Huge glaciers appeared in the long valleys sweeping toward us from the Alaska Range. Banking for a landing on the Southeast Fork, we could see the trail left by earlier climbers and Ray Genet's 8,600 ft. camp on the main glacier. We landed easily on the plane's skis and taxied up the gentle glacier slope to the site of our base camp. The flight took us about 45 minutes. Cliff walked up to check his base camp radio, which he found to be wet. He took it along to dry it out at home and we hauled our loads the 30 yards to *Base Camp-7, 250 ft.*

Base camp was situated at the traditional place on the north side of the glacier runway. Jack and Camp levelled a platform for 2 tents inside a low windwall. At Cliff's request, they also moved the long-wire antenna for the base radio to a point closer to camp. Tom and Dave arrived at 1800 hrs. A different basecamp radio returned with the second flight, along with a fresh car battery for power. When Bud, Horace, and John arrived, the 2 tent⁶ were put in order and dinner was prepared, which included fresh salmon purchased in Anchorage.

A roster was established which assigned two cooks, two KP's, and a water boy for each day. This list was maintained by the Team Secretary. The normal workweek was to be 5 successive days followed by a pause of 2 days, which came to be known as a "weekend". Several members had their weekends occurring during the mid-week.

It was 46° F. on the glacier at 1600 hrs; wind calm. An impressive ice and snow avalanche roared down from the northwest slope of Mt. Hunter during the late evening. The rush of snow made billowing clouds that moved across the upper part of our glacier.

CLIFF HUDSON — BUSH PILOT

Jack Lindsey told me the story about a group of 14 Mt. McKinley climbers who, in March 1956, were battered to exhaustion by storms. Their frantic radio calls for help were received by the National Park Service who then summoned 5 Alaska bush pilots, including Cliff Hudson. Cliff guided the pack of planes in the whiteout and turbulence by his radio and navigation lights, to the climbers waiting in their camp above the turn of the Kahiltina, at 11,200 ft. Cliff landed first. When he and 4 of the climbers were airborne, a twin radial-engined Beech successfully landed. Jack circled overhead in his Cessna and, while getting up the courage to land, he crashed into the West Buttress at 12,600 ft. elevation. This resulted in a broken leg for Jack and a 3-day wait for his rescue, during which time he burned his plane's fuel to stay warm.

It took 3 more crashes to tell Jack that bush flying wasn't that important to him (he is now employed at the Naval Weapons Center, China Lake, Ca.). Cliff, however, has had more "unscheduled landings" than that number (like the time he crash-landed 4 times in the course of a 200 mile flight!), but Cliff stayed on.

He came to Talkeetna in 1946, and lives there with his wife Ollie and their son in a comfortable, all-year quonset home near the town's railway depot. The new FAA landing field is just south of town, but he often flies out of the original landing strip that begins near the town's main street. Cliff keeps 3 planes, all equipped differently for his varied flying tasks: transporting hunters to remote hunting grounds, miners and prospectors to undeveloped and unexplored ledges, and mountain climbers to the southern glaciers of the Alaska Range.

We found Cliff to be too modest to talk at length on his prior exploits. He had none of the "flair" of an Alaska bush pilot in most imaginations. He appeared to like doing his job, and he made it look easy. He has had slightly less publicity than another pioneer pilot in Talkeetna: Don Sheldon.

A couple of us had an opportunity to talk with Don Sheldon while he was refueling his venerable Super Cub. He has won his recent bout with cancer and is still maintaining an active flying schedule.

Monday 18 June, Day 2. Haul to Cache-7, 200 ft on Main Glacier

We got up at 0600 hrs after a good sleep, although it was windy much of the night. The temperature in the tents was 38° F at 0800 hrs. We ate fresh eggs and Danish bacon for breakfast.

At 1000 hrs John, Tom, and Dave roped up and headed down to the main glacier with loads. The day was sunny with few clouds; wind 3-5 mph. The rest of the crew tied into a 4-man rope (2-120's)

and set out at 1100 hrs. Ournet loads were about 55 lbs each.

Bud Ford punched through on the main glacier at about 6,900 ft, sinking into the crevasse up to his waist. He was the fifth man over the route. Campy, as rope leader, was slow to react. He saw Bud down close to the snow and wondered what happened to his legs. Our first encounter with a crevasse fall was uneventful; Bud hauled himself out without assistance.

We dropped our loads at 7,200 ft and cached. A couple guys came down the glacier on skis and we learned that they were part of the Oregon-based Denali Arctic Environmental Project No. 2. They didn't make the summit, but camped still higher up were the remaining 4 from their party, who did. They reported all kinds of stove fuel cached at various places high on the route.

At 1400 hrs we received some rain which soon changed to snow. This lasted until 1530 hrs when we were down at 6,900 ft on our way back to base camp. After returning, we readied cargo for tomorrow's haul. 31° F at 2230 hrs, 0 wind. We were in bed at 2300 hrs.

Gordon Palmer, a stamp collector, suggested that the Vagmarken expedition might add an interesting side effect by carrying illustrated cover envelopes to Mt. McKinley. From the public sale of these envelopes, the Sir Edmund Hillary Nepal school building fund would receive all proceeds. Each team member signed his name (before departure) to 500 envelopes which had a picture of the objective peak printed thereon (showing Karsten's Ridge descending to the head of Muldrow Glacier, i.e., the other side from our route), and these envelopes were apportioned:

100 ea. to be carried to the summit and notarized as to this claim (\$5 ea.).

400 to be brought to base camp (\$1 ea.).

Tuesday 19 June, Day 3. Polish Sausage at Camp I-7,200 ft

This morning we arose at 0800 hrs; 32° F in the tents. It was very still outside. When we poked our heads out we saw that we were in fog.

Last evening Dave and Campy had tied 4 side-zip duffels end-to-end as a drag. They started pulling them down to a temporary cache at 6,750 ft. Tom followed with a heavy pack and a duffel drag. On their way back they met the others coming down, closed base camp, and returned to have lunch with the team at the cache. We made two carries of team and personal gear to the 7,200 ft. cache and made *Camp I-7,200 ft.* 24 loads to cache 6,750 ft; 21 to Camp I, and a few short of cleaning the cache.

During the day it was warm: 62° F at 1400 hrs, 0-1 mph. We were half of the time in sun, then in fog. There was much thawing with ominous avalanching sounds coming from the ridges meeting both sides of the glacier.

We pitched all 4 tents: The McKinley and Logan joined together, and the Stephenson 7 and 8. We cooked Polish sausage for the first time, a part of the 30 lbs we had along. It was sent airmail to Tom by Zupancich's Market in Ely, Minnesota⁷.

TENTS

Four different tents were employed. One, a Logan tent by MPC, could be joined to another tent of comparable design simply by closing a zipper installed on their tunnel entrances. The mating tent was a Mt. McKinley model obtained from REI, which had the added modification of a second entrance zipper (sewn in by Dave) for facilitating ingress without crawling through the Logan. These two tents could accommodate the whole team of 7 men, apportioned 4 and 3. Of center-pole design, they proved to be high enough for standing within and for supporting drying lines overhead.

The remaining two tents were different sizes of a quonset design by Jack Stephenson. Both of these, taken together, could also sleep the team, although in a different proportion. The Stephenson Warmlite Model 8 was quite suitable for 5 men (with much of their gear stored elsewhere), and its spaciousness earned for it the name "hall of the mountain kings". The smaller Model 7 was designed to sleep 3. Their quonset design is quite unique, however. The hall of the mountain kings tent permitted all 7 men to congregate, each hunched in a fetal position, and at mealtime the stove would roar happily at the end opposite the entrance. The 7, known also as the "great for storing gear" tent, was most comfortable when occupied by two team members: Bud and John. In setting up, the two Stephenson tents receive their rigidity by being forcefully stretched between 4 stout pickets or iceaxes deeply anchored in the snow, an ingenious feature which also served to keep hidden, underlying crevasses from widening during the night.

A very worthwhile tent accessory was the Ensolite flooring. This flooring, made from standard low temperature (—35° F) material 3/16 in. thick, added enormously to the warmth and comfort of any two of the 4 Vagmarken tents. (There are actually 12 formulations of Ensolite available, differing in composition, density, and cell size.) Dave Campbell researched, purchased, and trimmed the material to proper floor size, and the team carried the light but somewhat bulky rolls all the way to the assault camp⁸.

Wednesday 20 June, Day 4. Damp Overboots, Blisters, and Haul to Cache-7,800 ft.

We arose at 0630 hrs in fog and 52°/0 mph. We cooked breakfast of pancakes with butter and blueberry syrup in the McKinley tent while snow was being melted in the Logan.

To this point we had not found any serious deficiencies in our



A Snug Camp Below Kahiltna Pass at 10,000'



The "Valley of Silence" 11,000'



Camp I on Main Kahiltna Glacier

equipment and provisions. All of our snowshoe bindings required readjustments, based largely on the terrain traversed during the past two days: somewhat steep grades with a long, flat stretch in between. John's Stephenson packframe suffered a break⁹ which was made minor through the use of a roll of glass repair tape with which the pack was supplied. He also had to re sew a belt loop on his Kelty belt pouch. Several men became concerned over their damp overboots, which seemed to admit moisture in the soft leather sole area in spite of generous applications of Sno-Seal. Of a more immediate concern to Bud was the occurrence of painful blisters on his heels.

Both rope teams set out at 1000 hrs to clean Cache 6,750 ft, except for a single gallon of gas and a duffel bag that was badly worn from dragging. A total of 28 carries was required to complete Camp I, the final 7 being fairly light.

We had lunch in camp and then started up the glacier with medium loads. Tom, in the lead of the first rope, had a minor punchthrough within sight of camp. He then started probing. We climbed under clearing skies past a complex crevasse network at 7,300 ft, then up to and across the relatively flat and unbroken snow to the base of a slope at 7,800 ft. The remaining members of the Denali Arctic Environmental Project were found to be camped there. "Just taking our time and enjoying the glacier" was their reason for not making a hasty trip out. From this point, the west side of Mt. McKinley could be seen in its majesty, with only a few rapidly disappearing clouds still scattered near its summit.

Upon returning to camp (1800 hrs) we prepared a tasty dinner of beef and rice, corn, soup, and pudding. Clouds returned in the late evening. The Oregon group showed up, travelling on skis, and dragging the toboggan that was left near their camp by Ray Genet's party. They transferred its load to their packs and prepared to continue down to the airstrip. John hastily wrote a dispatch to the Yeti Yells and gave it to the group to be mailed. We planned to use the toboggan for hauling tomorrow, and then leave it where it was originally cached.

FOOD

Quality and taste notwithstanding, if the Vagmarken could have survived without it, all food probably would have been left at home. The 210 man-days of pre-packed daily menus were carried in 11 duffel bags weighing about 600 lbs total, which was almost the weight of all other team and personal gear combined.

A great deal of care went into the planning and selection of palatable meals. A goal of approximately 5,000 calories per man-day was set, and John Otter prepared a food list that seemed to meet this value. John acceded to the diversity of Vagmarken palates by circulating a food questionnaire and, in addition, offered a wide variety of menus to allow for possible changes in taste acceptability under differing altitude conditions. He devised 4 different food categories based on carrying weight and ease of meal preparation:

- A. Base Camp — fresh and canned foods, generally supermarket brands
- B. Storm Days, Low and High Altitude — dehydrated foods
- C. Action Days, Low Altitude — dehydrated "quick" foods
- D. Action Days, High Altitude — Freeze-dried foods

Each day's meals, separated by breakfast (including lunch) and dinner, were packed into 4-man packs and were given an alphanumeric designation. This designation gave the category and the menu number. Exceptions to this was made in the local purchase (in Anchorage) of about 6 days of fresh and canned food for eating at base camp. When the overriding concern was "What shall we have for dinner?", the contents of each meal packet could be read on a small list visible through its Mylar bag.

Lunch consisted of trail foods, i.e., sandwiches (made from Pompernickel and butter, various spreads, and/or jam or jelly), nuts, candies, cheese, etc. The morning cooks prepared and wrapped these lunches in individual plastic bags.

During the final few days before departure, John's bedroom covered with partially filled meal packets while repeated trips were being made to buy more of their contents. Richmore, Dry-Lite, and Mountain House foods, ordered in advance, were basic to most meals. Beverages items like Wyler's and Kool-Aid drinks, Cup-a-Soups, and Swiss Miss filled whole shopping carts, and when the supply at one supermarket was exhausted we had to finish our shopping at another.

Thursday 21 June, Day 5. Cache-8,600 ft and Airdrop

It was 28° in the tent when we awoke at 0515 hrs. The day was starting out completely clear and the wind died out soon after we got up.

There was a team council. All Vagmarken assembled in the Logan tent, and concern was voiced regarding the overboot problem. Several of the boots were too damp to dry during the night. There was fear that this condition could become serious in the higher altitude cold. It was decided to continue on in the hope that the drier snow anticipated later in the climb would lessen the problem, yet we knew we would have to be especially alert for severe, chilling storms. Tent assignments were another source of complaints, with this being resolved by a simple replanning of sleeping arrangements to gain more space. The 4 biggest Vagmarken were no longer crowding themselves out of the Logan.

By 0900 hrs, it was already 60° with 0 wind. We left at 1100 hrs with the toboggan, which Dave called the "wandmower" because it seemed to want to veer off the trail and flatten the wands. We made the trip to cache-7,800 ft in 1½ hours, compared with 3 yesterday. After lunch at the cache, we divided into 2 carry details for the steep

slope ahead: a lightly loaded rope team consisting of Jack, Dave, and John that was willing to make 2 carries to a new cache at about 8,600 ft; and Horace, Bud, Tom, and Campy who opted for a single trip with heavier loads. The slope was long and wearisome, and the pace was slow for the 4-man rope. Horace was in the lead of the rope. A tug on Campy's trailing rope told him that Bud was down, and this time he punched through to his armpits. Campy jammed his iceaxe through a coil but hesitated to draw up tension for fear of tipping Bud into the crevasse. Tom applied tension from behind and Horace moved back to assist. While cautiously approaching Bud from the side, Horace unexpectedly fell in up to his waist, but not before asking "Why did you punch through and not me?" Horace began working with the grain scoop¹¹, and soon succeeded in digging himself out. Then he extricated Bud, who could only hang by his outstretched arms with his butt getting cold while his confining snow burden was being removed.

On their way once more, the rope of 4 reached the intended cache, a campsite used earlier by Genet's group. It was 1600 hrs and a cold wind was now hitting us with forceful gusts and blinding snow. The first rope scurried back to get their second loads while the single-trippers stayed to set up the Warmlite No. 7 and stash the 7 loads. The wind proved to be very brief. The slow team then proceeded down Horny Hill¹² and passed Jack's rope once again. Reaching the base of the hill, they tied their nearly empty packs on the toboggan for the walk back to camp, and arrived there at 1930 hrs; 42°/7 mph. The later rope arrived a half hour later. Dinner preparations were hampered by the noodles being found missing from the tuna and noodles menu, so we had tuna and peas, along with some leftover cheese which was sliced into the pot by Tom.

We had just begun eating when we heard the sound of a single engine plane. A couple of us crawled out of the tent to look at it. It circled wide, and we concluded that it wasn't Cliff Hudson's ski-equipped Cessna. We settled back down in the tent and, directly, the plane came in low and roared by just overhead. Leaning out of the tent entrance, Tom yelled "It's an airdrop". We all piled out like a Chinese fire drill and ran over to pick up the package. It was a ½ gallon box of icecream, which was wrapped in a brown paper bag. "Courtesy Don Sheldon Talkeetna Air Service" was lettered on it. Fortunately, it arrived just in time to go with the strawberries we were having for dessert. Horace said that we should pour PABA¹³ over it and light it.

Friday 22 June, Day 6. Camp II-8,600 ft.

We slept a little later than usual. It was 40° in the tent when we got up at 0630 hrs, but outside the morning sky was overcast, with some wind coming down the glacier. Campy woke up sick, with symptoms of gastritis. We broke Camp I and the order of rope 1 was Campy, John, Dave. Campy's pace was slow. The second rope managed the toboggan. Campy couldn't hack it with his load and, at 7,500 ft, his Kelty was added to the load on the sled.

We reached the 7,800 ft cache, had lunch, and were passed there by a Japanese team which was on their way down². They were equipped with skis. One of the 7 could speak some English and he reported that they had been on the mountain for a month and had climbed the summit twice.

Caching the toboggan where it was found near our cache, we continued our carry up the 800 ft to yesterday's forward cache. Tom, Bud, and Campy stayed to put up the Logan and McKinley tents while Jack, Dave, Horace, and John returned downhill to retrieve 4 more loads. Their return brought a total of 21 loads now in Camp II-8,600 ft. Four loads were left to carry up tomorrow.

The day had been somewhat windy, with gusts to 40 mph. Windborne snow frequently cut visibility, although the clouds of this morning had disappeared by noontime. Our camp here was near Kahitna Dome, which rose above us to 12,525 ft. By climbing up Horny Hill, we advanced beyond the confluence with the Northeast Fork of the Kahitna, thus reaching the beginning of the narrow upper run of the main glacier. Our distance travelled has been 6½ miles, or 40% of the total trip to the summit. Yet we are still barely 1,400 ft higher than where we started at base camp.

Saturday 23 June, Day 7. Cache-10,000 ft.

Wind gusted all night, driving snow against the tents. We slept until 0700 hrs. It took us a long time to get suited up since the wind and just-freezing snow called for windpants over our wool clothing. Looking at his weak coffee, Bud remarked that it looked like "stud-horse piss with the foam farted off".

Bud, John, Tom, and Campy went down Horny Hill to close cache-7,800 ft. Jack led the other rope to set a high cache. The two teams parted at 1230 hrs — a new record for late starts. The cache-cleaners returned to camp at 1530 hrs and, after lunch, set out to carry up loads. The wind at this time had moderated a bit: 52°/20 mph. On the way up the glacier, Campy's snowshoe traction cleats punched two diverging lines in the crusty snow, causing John and Bud to discuss this feature. Bud said the tracks were made by a "Campy-Bird". At 1630 hrs the storm broke.

A well-built igloo was found at the traditional 10,000 ft camp where we cached our loads. The igloo had 3 rooms. Some food and equipment were stored there, including "Jiffy" rice packages left by the Japanese team. It was 10° warmer inside, and a max-min thermometer placed near the cached gear registered 7°/20°. Outside, it was 26°/5 mph at 2030 hrs.



Corniced West Ridge of McKinley, Lakes and Tundra in Distance



West Butress, 16,700 ft., Bud



Upper Kahiltna Glacier From Camp III



Descending "Horny Hill" Below Camp II



Mt. Foraker 17,400' and Main Kahiltna Glacier From Camp VI



The Weather Is Held Back by the Alaska Range 11,000'

The two teams met at about 9,000 ft. Jack and Horace had dinner ready when the 4-man rope came into camp at 2130 hrs. The wind was again hitting the tents at 30 mph. Dinner consisted of "glop" — a pot of rehydrated and cooked freeze-dried food having nearly the same taste no matter which menu is chosen. It was 32° at 2330 hrs in the McKinley tent, in which the smaller group of 3 men were assigned.

Sunday 24 June, Day 8. Camp III-10,000 ft.

It was 29° F in the tent when we got up at 0730 hrs. Last night's wind stopped blowing and there was a high overcast, according to Tom who was first to peek out of the tents. By 0930 hrs we were in a cloud; 55°/0 mph.

We started out as two roped teams, the second one departing slightly later than the first at 1130 hrs. We made it to cache-10,000 ft in 2 hours. The wind was up again, gusting 30 mph and driving snow across the glacier; 26°/0-30 mph (1330 hrs at 10,000 ft). We immediately turned around for the 1 hour trip back to camp; 32°/0-30 mph (1430 hrs at 8,600 ft). During lunch, Tom told us a Jack London short story.

Breaking Camp-II and departing together at 1700 hrs, we took 2½ hours to make the final 2 mile, 1400 ft. climb to *Camp III-10,000 ft.* We pitched the Warmlite Models 7 and 8 on a platform near the iglooplex and began cooking the second batch of Polish sausages. We cooked in separate commissary. Jack, Horace, and Campy in the No. 7 cooked their 30 sausages in 2 quarts of soup and began eating at 2230 hrs after a long, hungry wait for the mixture to be well cooked. The other tent added Japanese Jiffy rice to their pot and called it "ski-yaki". 9°/0 mph. (2330 hrs).

Monday 25 June, Day 9. Cache-12,300 ft. and the Gorak Appears

We got to bed late last night and so we slept until 0730 hrs. The sun was shining brightly but low clouds were slowly moving up the glacier; 20°/0 mph (0800 hrs).

Talk was heard coming from the No. 8 tent concerning bowel irregularity, the maintenance of which the Vagmarken climbers have experienced no difficulty to date. Dave recalled the efficiency of "little red rectum rockets", which we didn't happen to have along, but Bud had some white ones which had been donated to the team by a certain veterinary clinic.

Bud, John, and Campy left at 1145 hrs to clean the downhill cache. Campy carried his snowshoes rather than wearing them; they were found completely unnecessary for the return trip as well. 60°/0 mph at 8,600 ft and 1300 hrs. Returned to Camp III at 1600 hrs; 58°/8 mph. A total of 24 loads came to Camp III.

Before reaching Camp III, while the 3-man team was still ¼ mile away, John saw the gorak¹⁵. It was a black speck which bobbed up and down on the snow behind the tents. We had all our food packets spread out there for sorting. A 15 min. opportunity was afforded us to ponder the fate of our food as we slowly trudged up the grade leading to camp. The gorak took off once as we approached but then returned for another load while we helplessly observed from our well-before-the-battle area positions. He sampled quite a variety of foodstuffs, including margarine, cheese, bacon bars, and cake, but the overall damage was slight.

The other rope team, led by Jack, departed when the cache-cleaners did, but headed up the turn in the glacier to reach 12,300 ft with their heavy loads. The steepest snowshoe climbing of the trip was encountered while gaining the West Ridge at about 11,500 ft. From this beautiful, corniced ridge, some of the most exotic views of the climb were enjoyed. Unusual lighting effects played on the clouds below. Sunlight reflected off distant lakes on the Alaskan Plain (Kuskoquim Flats), turning them to a shining gold. Later, falling ice crystals glittered in the sunlight. Jack's team returned at 2130 hrs and told of soft snow and tough snowshoeing in spots. They took 8½ hours to get to the cache. Ray Genet had left gas, manila rope, and other supplies at this location, which was the site of his, and other prior camps.

This afternoon while Jack's team was away, Fred, Bud, and John worked on their personal equipment. Campy brought the journal up to date, filling in some details before they are forgotten forever. A few pounds of equipment and clothing were selected out for caching here for our return. John finished sorting the un-goraked food and Bud had to treat his blisters.

Dinner was started before the expected return of Jack, Horace, Tom, and Dave. It consisted of spaghetti and meatballs with cheese, noodle soup, raspberry plunch, plus the usual coffee, tea, or Swiss Miss.

Tuesday 26 June, Day 10. Haul to High Cache in Storm

The Vagmarken slept until 0830 hrs, and Jack was the first one out, inspecting the windy, snowy dawn of the new day, and digging away the fresh snowdrifts pressing in on the tents. A Pacific storm was raging. Several members questioned whether we should carry loads up high on a day like this, since the snow would certainly be soft and some of the climber's boots had still not adequately dried.

Jack persevered, hoping to make the day a useful one by carrying medium loads, perhaps to a 13,000 ft position for the next camp. We bundled up in our foul-weather clothes. At 1030 hrs it was 22°/25 mph and visibility was fair. When we departed at 1300 hrs we were not immediately hampered by the storm, but the going became tougher above 11,000 ft when yesterday's snowshoe tracks were found to be covered with fresh snow. Jack had wanded some gaps on the route yesterday and these wands were our only visual reference at times. We ascended with some difficulty the slope at 11,250 ft.

The cache was at 12,300 ft, and our loads were added to it at 1910 hrs. No thoughts were given to continuing higher on this day. At 1915 hrs it was 19°/30 mph, but Jack said that the wind had reached 50 mph at times since it takes that much to stop him in his tracks, which it did.

Campy took the lead part way down the steeper slope, and navigated without goggles since they had fully frosted over. The downtrail was punctuated by some unheard voice signaling, resulting in a couple of instances of men unintentionally skiing down a traverse and/or tugging/standing on the rope¹⁶ to arrest the pace. The return trip took only 1½ hours. We arrived in camp at 2100 hrs amid signs that the storm was easing. By 2130 hrs the sky appeared almost cloudless but snow was still swirling around from the wind.

Polish sausage was again on the dinner menu, and we boiled it in noodle soup skiped with freeze-dried corn. Tom surprised us all with excellently prepared casadilla, which is a house specialty for his family, yet a seemingly impossible culinary expectation from a single small stove in a confining tent. KP and tent rearrangements for sleeping delayed our retiring until 0130 hrs, by which time the wind had decreased to only occasional light gusts.

An interesting side effect of today's storm was the observance of frost as it formed on Vagmarken mustaches and beards. Tom's, due to its distinctive style, frosted into what appeared as a small, pearl toilet seat.

SEX

It can unreservedly be said that there was no sex during the period when the team members were in Alaska, or at least, until certain members separated from other members in Anchorage, ostensibly to take an early flight home. Whereas a certain other Mt McKinley expedition has plotted the sex/food desire crossover at 7 days after entry onto the Kahiltna, we, the Vagmarken, were unable to detect one. The reader is left to ponder this. (Ed. note: the word "osensibly" in the above brought a rejoinder from one of the early departers, who recalled the numerous "massage parlors" noted during an earlier tour of Anchorage. I answer; what better emollient for tired, fatigued muscles after a climb.)

Wednesday 27 June, Day 11. Camp IV-12,300 ft.

Some of us awoke to John tramping around outside the sun-warmed tents. He then loudly proclaimed "The visibility is a little better than yesterday; you can see for 300 miles!" The altimeter showed 31,275 in. Hg (SL) — a good high pressure day. Everything dried out rapidly.

Horace had planned on wearing a new pair of Duofold but was denied this when he discovered that he had been sold a size 44 bottom instead of a size 44 top.

We packed up our camp for the move. The first rope, of order Dave, Fred, Horace, started out at 1410 hrs. It was a beautiful snowshoe trip to the ridge, and we gathered there for pictures. Each camera was passed to someone else to achieve individual poses with Mt Foraker in the background. Tom prepared us for a group picture with his camera supported on his iceaxe by a clamp. He activated the shutter delay, triggered it, ran toward the group, and then tripped over his snowshoes and nosedived into the now, sliding to a stop just within camera view when the shutter went off.

We had now left the broad, flat Kahiltna Glacier and it felt good. We continued upward to cache 12,300 ft, with the final 1½ hours climbed while engulfed in freezing clouds that drifted up from the north. We arrived at 2100 hrs and decided to set *Camp IV-12,300 ft* (since visibility was poor), rather than carry on to a higher point to the south.

The Warmlite 8 went up, and the McKinley and the Logan. Probing in the snow on the shelf where the camp was located revealed that we were encircled by narrow crevasses. It became clear that we were standing on a huge glacier block that was separating from the main mass. John and Bud cooked dinner in the 8, where we all gathered to eat. Jack and Campy had KP, and finished at 0100 hrs. It was -10° in the tent, and -1°/0 mph outside.

PACKS

Historically, carrying one's burden on one's back is as old as mankind too poor to own a horse. A product of the late period of the industrial revolution is the modern pack frame, designed to carry with relative comfort a sizeable burden. Yet, a piddling ideal at best is the notion that this burden could be hauled all the way to the top of Mt McKinley and back in a single load. In fact, an equivalent of 4 packloads per man was required (by carrying or dragging) to transfer the expedition from Base to Camp I, while the return to base at the end of the climb involved no less than the equivalent of 3 packloads for each.

Kelty packs predominated with the Vagmarken, but there were also an Adventure 16, a Jan Sport, and a Stephenson pack, the latter deserving special mention because it was supplied with its own repair kit. The heaviest loads carried were probably about 70 lb; 55 lb was the norm. It was quickly learned that heavier carries led to much backstrain and gnashing of teeth, with a resulting need for more frequent rests. On the other hand, moderate loads permitted a good snowshoe pace that could be maintained.

Thursday 28 June, Day 12. Cache-14,200 ft, We Meet Part of Genet's Group

Campy started heating water in the McKinley tent upon awakening, using the stove, thermos bottles, cups, and beverages that were brought



Top of the Continent



4th of July Celebration

Otter, Camphausen, Campbell, Ford, Ory, Park



View From Summit

in the night before. The team began showing signs of life around 0915 hrs. Clouds were still lying in a solid blanket below but were slowly rising. Some vapor was already drifting over the West Ridge. By 1130 hrs it was 41°/5 mph. The weather was still superb when we departed with fuel and food loads at 1315 hrs.

The GE Pocket Mate radio was first tried at our lunch spot at 13,200 ft. A small hill blocked the attempt at reaching Anchorage, and this could easily have been climbed to make radio contact in an emergency. Fairbanks could have been raised in a similar way from Kahiltna Pass (10,320 ft), a short walk from Camp III.

Bud had probed our route to "Lunch Rocks" and he confirmed the presence of 3 small crevasses that had been cross-wanded earlier. After lunch, Campy led with the probe pole and soon found another by punching through with both feet and pole.

Nearing 14,200 ft. we heard voices and a little later we saw a camp. We snowshoed into the little group of tents and were met by 4 people from Ray Genet's party, who offered us a drink of Wyler's orangeade. We dropped our loads and talked. Genet's main group was at their assault camp and probably had already put climbers on the summit. Three members were here with the intention of joining the returning group. They didn't wish to complete the climb and one of them had frostbitten fingers¹. Genet's lovely business manager, Marlene Titus, was awaiting developments, and would either accompany the group back or traverse to Wonder Lake with Genet.

Tom and Bud took the portable radio for a walk up the slope to about 14,500 ft. They both made radio contacts with a phone patch from Anchorage, Tom to Donna in Kansas City and Bud to Steffy in Reseda. When Steffy asked "Where are you?", Bud answered "At 14,500 ft on the West Buttress!"

22°/4 mph (2000 hrs, 14.2 kft). It took us only 40 minutes to come back down to Camp IV. Tom and Horace cooked dinner, which was salmon and peas followed by strawberries without icecream airdrop. Just before hitting the sack at 2330 hrs, we looked out over the western lowlands and saw hundreds of lakes shining on the dark plain..

RADIO

The team rented a portable high-band VHF radio from Communications Engineering, Inc. in Anchorage. This radio was intended primarily for emergency use, and it could reach Fairbanks from Kahiltna Pass or Anchorage from several locations above 12,300 ft. A secondary benefit was its ability to call the Anchorage Airport Weather Service or even one's own home via a phone patch arranged by the radio dispatch service in Anchorage.

A GE Pocket Mate 2 watt model was selected, which weighs 6 oz and measures 1/2 x 3/4 x 8 in. Its monthly rental charge was \$121.70 plus \$6.30 for an extra set of mercury batteries. The normal \$50.00 insurance charge was waived.

1. Sean Tully of Carlisle, Mass. He took his misfortune goodnaturedly.

Friday 29 June, Day 13. Camp 14,200 ft

We speedily had breakfast and broke camp, departing at 1205 hrs. 1 1/2 hours later we were at lunch rock and we decided to divide the team at about 13,500 ft into two separate details. Three men dropped their loads there and returned to clean the temporary cache left at Camp IV. The rest pushed on to 14,200 ft, and all but Campy returned to ferry back the 3 dropped loads. Campy leveled tent platforms, set up the Logan, and dug a latrine.

After Tom, John, and Horace returned with their pickup, there was another Sheldon airdrop, this one intended for the Genet party. The Super Cub made a low pass of the camp and released a box containing 1 1/2 gallons of icecream. It was retrieved by Titus, and a large box of Anacin was packed inside for Sean Tully. She tossed it toward him and, without thinking, he caught it with his frostbitten fingers, and hopped up and down in pain. We all went to eat icecream. Jack, Tom, and Dave came into camp at 1945 hrs.

As soon as the No. 8 was pitched, John and Dave started cooking dinner and we gathered inside to eat. When the sun disappeared over the West Ridge the temperature fell rapidly. It was 0/0 at 2230 hrs. We had carried 17 loads to *Camp V-14,200 ft.*

MEDICAL

The expedition did not have a doctor-climber. The skills of the members imposed limits, therefore, on the treatments that could be employed and on the sophistication of the medical kits. Two members, Horace and Campy, had ARC First Aid Instructor ratings.

Three medical kits were assembled: a base camp (BC) kit and 2 smaller high altitude (HA) kits. The 2 identical HA kits were to provide a limited capability in the event the team decided to provide for climbing separated and lengthy routes. The BC kit was to be taken at least as far as the final camp below the West Buttress. Their makeup stressed compactness in the belief that over-planned medical kits tend to be bulky, complex, and thus frequently "overlooked", i.e., not taken along at the start of the day's climb. The kits were assembled with the supplies and drugs they contained should last 4 to 6 days for a wide variety of illnesses or injuries. Makeshift bandage requirements would come into play for major emergencies (a single major accident can completely strip the dressing components of most kits). A planned radio communication capability was seen to somewhat improve the rescue and emergency evacuation outlook.

Drugs were selected on the basis of their known, predictable effects at high altitudes and their ease of administering. Each individual was to carry a packet containing his own prescribed medications, vitamins or

supplements, salt tablets, protective cremes, and a small quantity of bandaids, moleskin, etc. Stress was thus placed on maintaining the team kits intact and relatively undisturbed by providing for the accident or illness victim rather than for the minor day-to-day needs of the climbers.

There were no accidents or serious illnesses during the climb. The occasional headache, nausea, or stomach pains required only minor use of the available medications.

Saturday 30 June, Day 14. Cache-16,450 ft

At 0800 hrs it was 2°/0 mph. Tom and Campy cooked breakfast and, after eating, the team held a conference in the big tent. Jack was induced to designate today as a rest day for the team. Some men at this point were fatigued and others were slightly ill.

A team of order Campy, Jack, Dave and Horace decided to make a light carry up to, and if they wished, beyond the fixed line on the Buttress. The snowshoes would be of no further use on the ascent; we all tried on our crampons. The sky was clear and the thermometer stood at 60° in the shade, measured at noontime. Starting out at 1235 hrs, the four travelled at a steady pace on old trail, reaching a lunch spot in 1 1/2 hours, about 1,000 ft above camp. The fixed line was reached and it appeared to be serviceable, although partially iced under. There were actually a mixture of several lines: small diameter Perlon and polyethylene, and some larger, well-furred nylon. Climbing was slowed by the effort required on the steep slope. Jumars and Gibbs ascenders were found to be useful. The encountering of frequent pipe or picket anchors increased confidence and the climbers began pulling their way up as they kicked their steps in the mixed ice and snow.

From the top of the fixed line at 16,200 ft, all the peaks across the Kahiltna could be seen, as well as Mt Hunter to the south. It was sunny but slightly windy. High cirrus clouds were noted with some concern. Horace gained the top of the ridge in considerable pain due to tight crampon straps. Four members of Genet's party were met at the ridge and they reported that all of their group had made it to the summit. One man, Walter Jellin, knew Carl Heller at China Lake. Campy also learned that Larry and Virginia Sherwood, with whom he had climbed in Peru, were both up at 17,300 ft and were traveling down the Muldrow.

The four arrived on the ridge at 1800 hrs, and after talking with the returning climbers, carried on another 250 ft of altitude to a good cache spot for their loads. There was a small campsite here that sloped off precipitously, calling attention to the need for a good rope fence to protect camp members who may be sleepwalkers.

Tom had dinner ready when the four came back: chicken and dumplings with peas. We could all sit and eat in the No. 8 tent, in which socks were hanging down from a cord stretched along the centerline and dripping into our food. These conditions were typical of our informal meals. The socks would have had to come down for formal dining, but this sacrifice was unimaginable. Besides, John left the candlesticks at home. And we didn't have any wine.

PUBLICITY

Newsworthy events occurring between occasions when we would meet a returning climbing group on the trail were hastily written down by John Otter, who then coerced the group to post the note in Talkeetna. The exclusive recipient of these dispatches was Gordon Palmer, beloved editor and publisher of the very independent Vagmarken YETI YELLS monthly newspaper. The June issue was not put to bed too soon to contain the first such news flash. The YELLS also maintained an active interest in the expedition story after our return, in the form of an exclusive report by Dave Campbell which was published in later issues.

Sunday 1 July, Day 15. Cache-16,700 ft, We Meet Ray Genet

We got up at 0830 hrs and Bud and Dave cooked breakfast outdoors. Tom's birthday was celebrated by lighting a huge candle on a tiny, stale cake and placing it in front of Tom's tent. When Tom emerged, we sang "Happy Birthday" and he said "That's nice even though it's a day late". Then we all joined Tom in not eating stale cake.

It was 40°/0 mph at 1030 hrs. The team made ready for a carry up the fixed line. A single man was observed streaking down the slope above up, and the guys in Genet's group said that it must be Genet. It was. He came down to bring Titus with him on the traverse. Bud, Tom, John, and Campy started with a medium weight carry at 1125 hrs, making it to the base of the fixed line at 1503 hrs, and we topped out on the ridge at 1627 hrs. Clouds were seen in a solid sheet to the north, with a few drifting between us and Mts Foraker and Hunter. Genet and Titus came rapidly up the line and our team waited at the top for them to rest and then take off to catch up with their group.

We continued our climb, now partially in fog, reaching yesterday's cache at 16,400 ft. We took part of it higher to a turnaround near 16,700 ft. It required less than 2 hours to return to Camp V. Dinner was waiting. John said "Don't use the Accent since it will bring out the flavor".

It snowed lightly in camp between 2100 and 2200 hrs, and it was 40°/0 mph at 2230 hrs. Earlier, at 1750 hrs, radio contact was made with Anchorage Airport Weather. They forecast no change through Tuesday, yet we could see huge thunderheads to the north and west.

The Vagmarken had attained somewhat of a rest during the past 2 days. Only 4 loads were taken up to the ridge on each of the past 2 days. Campy carried on both days, but then started having stomach problems. Jack, Dave, and Horace were planning to follow with a carry today but found too little to make it worthwhile. They spent the afternoon collecting and sorting the gear for tomorrow's move.



View N.W. From Behind Archdeacon's Tower Glacier at 19,500'



17,300 ft. Dave



Kahiltna Glacier From 17,300'

BOOKS

It seems slightly appropriate to note that most Vagmarken climbers brought to the mountain a small paperback volume or two, to read when moments were available for such leisure. Since the weather had maintained so propitious for climbing not a great deal of idle time permitted the luxury of reading, but the following list of titles illustrate the kinds of literature that were available:

"A Sand County Alumnac" by Leopold (Dave)

"Virgin for Sale" by Edward Rutledge and "The Blond Knight of Germany" by Col. R. F. Toliver and T. J. Constable (Campy)

"The White Dawn" by James Houston (Horace)

"Red Sky at Morning" by Richard Bradford and "The Man Who Walked Through Time" by Colin Fletcher (Tom)

"Galaxy" science fiction magazines (Bud)

Monday 2 July, Day 16. Camp IV-17,300 ft After a Long Day on the Ridge

After breakfast we started to load up camp, leaving the No. 8 pitched and some miscellaneous gear and food behind. A halo was around the sun. It was 80°/5 mph at 0800 hrs.

After saying goodbye to the Genet party in camp, we started out for the Buttress and met the final 6 Genet climbers as they approached camp. Their group was now evenly divided between those making the traverse and those returning via the Kahiltna. We were on our way at 1150 hrs and had lunch at the usual spot at 1320 hrs, and we found the going slowed by storm and wind. It snowed, but then cleared as we climbed above it on the fixed line. Reaching the upper cache at 2000 hrs, the storm was mostly below us, but it was cold.

We moved with excruciating slowness along the ridge and, finally, arrived at the usual campsite below Denali Pass at 2230 hrs, set up the No. 7 and the Logan, and collapsed inside. 15 loads were carried to *Camp VI-17,500 ft*, including about 3 that were still at the 16,700 ft cache to be brought up later.

Some of us inspected the ice cave that was there, and found all kinds of food left by former parties. There was also stove fuel (Standard Blazo). The sleeping platforms in the cave were pallets of sandwiched styrofoam and plywood, and they appeared to have been there for some time. At least 10 people could sleep comfortably.

Jack and Campy cooked dinner, which included onion soup, salami, and beef patties. We all were in the sack at 0230 hrs, with Tom, Jack, Dave, and Campy in the Logan, and the rest in the No. 7.

Tuesday 3 July, Day 17. We Prepare for Summit Climb

We woke up at 1000 hrs but an hour went by before water started heating for breakfast. We decided to rest, clean cache-16,700 ft, and make ready for a summit climb tomorrow. Jack was ill when he woke up and John wasn't feeling too well either. Yesterday was a long day.

From a rocky point nearby, Campy talked with the weather service by radio. Their forecast seemed good: decreasing cirrus and -9°F free air temperature at 20,000 ft.

Bud and John decided to recon a portion of Denali Pass, which started ½ mile away from camp. Dave and Horace left around 1600 hrs to clean the cache below camp and Tom followed an hour later. Jack and Fred improved the camp.

At noon it was 30°/0 mph. At 1645 hrs, 26°/6 mph. At 1730 hrs, 20°/6 mph. In the ice cave at 1630 hrs, it was 6°.

All of the Vagmarken were back in camp for dinner. We put up the McKinley tent that was brought up from the cache but its center-pole was inadvertently left behind. A 2-section telescoping pole was found near the rocks where an aluminum grain scoop and several other items were left by a prior group, and the pole worked well as a substitute.

When dinner was over at 2030 hrs, the measurement were 30°/10 mph. Bedtime was 0030 hrs, at which time it was -9°/0 mph.

Wednesday 4 July, Day 18. The Summit Is Reached

Today was to be the big day; we were 15 miles and 10,000 ft above base camp and 1½ miles and 3,000 ft short of the summit. Recapitulating recent events and data:

- We had been moving toward the summit for 16 days, i.e., 17 days since our arrival at base camp.

- The weather was favorable for climbing on all but one or two days, but we maintained our forward momentum on each of the 16 days.

- Our carries were moderate, requiring almost level day-to-day effort. This minimized physical deterioration with altitude. The temporary illness of several members, although of uncertain etiology, probably did not have inadequate altitude conditioning as a strong factor.

- Each individual was psychologically confident in the team's success and anxious to reach the summit goal. Minor antagonisms emerged, but never posed a threat to the expedition.

- We had taken more days to reach this point than most of the prior summer climbing groups on this route, but we had, with the added benefits from good weather, brought all team members up in excellent condition for the demanding final climb.

Now the summit was within reach, and we knew that we would have a long and tiring climb. The weather appeared to be stable for it. Tom and Campy both woke up with nausea.

The ropes were made up: Jack, Bud, and Campy; and Tom, John, Horace, and Dave. These orders were to change during the day's climb. Team emergency equipment was distributed among the men as follows:

Jack: wands, ensolite, and crampon repair kit...

Campy: medical kit, radio, and shovel-fluke

Bud: shovel, ice screws, ice hammer
Tom: emergency food
John: stove and miscellaneous
Horace: spare rope, slings, hardware
Dave: spare rope, slings, hardware

The first rope started out at 1105 hrs; the second rope somewhat later. Both were together by the time the top of Denali Pass was reached. The Denali slopes were easily traversed due to well consolidated snow, and we topped out after 3½ hours of climbing. The sun was shining part of the time and, on these occasions, the temperature reached 20° at 18,300 ft. It was -20° while in fog at 19,200 ft, but we gradually climbed above all the drifting clouds.

Tom had started the day with a severe headache but it diminished along the way. Campy wasn't feeling too well. Jack and Bud, both recognizing Campy's distress, alternated with the step kicking.

We stopped to rest a couple times below the Kahiltna Horn and, in evening, reached the Great Basin. Jack took the lead on the final 800 ft slope below the summit, and followed along a faint trail in the snow.

Jack stepped onto the summit horn at 2340 hrs, 4 July. We collected here in the weak, rosy sunlight and rejoiced as best we could in the cold. The thermometer read -23° and Dwyer windmeter registered 30 mph; the equivalent of -90° still air chill.

Campy's camera lens frosted over when opened for changing its film. Bud took pictures of the group standing on the summit but the shutter did not appear to be functioning at the proper speed. It was doubtful that there could be much summit photography because of unsatisfactory camera operation. Most of the time, the group of Vagmarken just slowly tramped around and enjoyed the view. The radio was tried, but contact with Fairbanks was soon lost due to the freezing of its batteries when it was taken from within Campy's down parka.

We soon retreated a few feet down from the summit to a partially sheltered bowl. We spoke very little, and we seemed to move numbly. Jack insisted that everyone put on their down pants in preparation for the trip back down. We complied, and Jack helped by snapping and zipping some with his hands briefly ungloved.

After 45 minutes we began to move downward. We were out of the cold wind after descending a couple hundred feet. On the level basin once more (near the Archdeacon's Tower), Bud called a halt. He announced that he was going to bivouac until morning and then return to the summit with his camera rewarmed for more pictures. There followed a time during which this plan was discussed. Dave agreed to stay behind with Bud for added safety.

Moving downward again, the remaining 5, roped 3 and 2, reached the rocks at Denali Pass where they conspicuously cached the stove, pot, and food for Bud and Dave in case of need, and returned to Camp VI at 0600 hrs, 5 July.

Thursday 5 July, Day 19. The Team Takes a Long Rest

Sleep came immediately upon retiring for the 5 Vagmarken now in Camp VI. Bud and Dave, settling in at 19,500 ft, adjusted to their cold bivouac more slowly, but accomplished some sleep until the sun was beaming strongly on them at 0900 hrs. They returned in good time to the summit and stayed there for more than an hour and took numerous photographs. 0°/0 mph.

In Camp VI, the team slept until about noon (except for John who didn't get up all day). Tom and Horace heated water while the rest of the crew slowly began to move around. They drank liquids but didn't feel like eating much solid food.

In accordance with an arrangement made in Talkeetna 18 days earlier, Campy called the NPS Headquarters to see if an airdrop of the rescue gear could now be undertaken. Unfortunately, Steve Hackett was not there and no other Park Ranger was able to coordinate. Thus ended this project for the time being.

Campy called Martina at work but communication was poor due to failing batteries. In late evening calls with fresh batteries installed, Martina was reached at home in China Lake, and Jack woke up Lorrie at 0200 hrs Madrid time.

We could observe Bud and Dave coming down from Denali Pass in mid afternoon. One or the other took a long slide from the trail while still high near the pass, but he was stopped by quick arrest of his companion. It seemed to take a long time for him to return to the trail. It turned out that Bud had taken the fall, which resulted from crampon failure. They told about the incident and their experiences on the summit when they came into camp at 1600 hrs. They measured -20°/calm wind at their bivouac at 0600 hrs.

We were all together again and, by now, very hungry. We ate the first decent meal in almost a day and a half and, later, had a conference to plan our descent from the peak.

HOUSEKEEPING AND PERSONAL HYGIENE

The standard camp chores: cooking, KP, and snow melting had been established on a schedule, so each man supposedly had these duties with the same frequency. Occasional departures from this schedule were necessitated by the makeup of the roped teams; the first team returning to camp in the evening would start dinner and keep it warm until all had arrived. Separate cooking arrangements were sometimes employed (e.g., Days 8 and 9 at Camp III) when the two Warmite tents were used. KP and snow melting were also ad hoc duties on these occasions. Although pitched side by side, the Warmite tents kept the two groups isolated in terms of mutual activity, yet they could communicate easily, except when the stoves were roaring or when strong snoring sounds came from a sleeping yeti.

We threw our trash into a deep hole in the snow (the latrine)

and burned this prior to filling with snow when breaking camp. Exception to this procedure was made while at our landing strip base camp, since Cliff Hudson warned of ashes that could surface and blow over the glacier runway, thus causing deep suncups to form thereon. Campy served as the usual latrine closer, although his position was seemingly eagerly usurped by others on occasion.

Great quantities of snow had to be melted to satisfy the team water needs, which amounted to 4 to 6 quarts per man per day. At and below Camp II (8,600 ft), a 6 x 9 ft black polyethylene melt tarp was effective. It worked by melting several shovel loads of snow sprinkled over its surface while we were away, and water collected in its depressions for use in the evening. The water needed for breakfast was stored in personal water bottles and the team thermos bottles overnight in the tents. At higher altitudes, stove melting continued for several hours each day, and this was usually accomplished in the tents during and after the morning and evening mealtimes. An open-top 5 gal square metal can was used for bringing snow into the tents. Not all snow was clean, especially when collected around well-used campsites. Much hair of unknown origin and other gucky-looking floaters appeared in the water and had to be skimmed off (when noticed). The bottles were often filled through a strainer device attached to the funnels. The 5 gal can was also brought along to serve as a tub for rapidly rewarming in emergency frostbite treatment. This rewarming was to be performed, of course, only at the place of intended pickup by plane should bad weather prohibit the immediate evacuation of the victim.

Tent cleanliness was a forelorn hope that was inadequately served by a brush or a sponge, plus a certain effort at brushing off individuals entering the habitat. This was performed by a tent operative who was (1) near the tent entrance at the time and (2) happened to have a brush within reach and (3) was not ticked off at having already repeated this function 23 times during the last half hour.

Personal hygiene was slightly below conventional standards. The B.O. problem was phenomenal at all times under 14,500 ft, at which altitude the "ripe" odors mysteriously disappeared. No deodorant could hope to win the raging battle that commenced with its application. At the higher altitudes, one could live with himself only by the virtue of a numbing of the olfactory nerves or some other, less understood manifestation. No-one was seen to wash his face. No-one shaved. No-one smelled very nice after the first day. At the end of the first substantial carry, Campy determined that the excessive weight of his toothbrush demanded that it be stored at the 10,000 ft cache. Indeed, he wore the same wool shirt continuously (except during hot days low on the glacier) for the entire duration of the climb.

Friday 6 July, Day 20. We Leave the West Buttress

We got up at 1000 hrs, when the sun heated the tents so much that they were uncomfortable — another shining day. Jack started water for breakfast.

It took less time than usual to break camp and Jack, Dave, and Campy started down at 1410 hrs. Our excess food had been stored in the ice cave. We found the going somewhat difficult at and below the fixed line as the line, and the trail below it, were completely covered by fresh snow. A storm had apparently come to the lower slopes that we were not aware of. We came into Camp V-14,200 ft at 1900 hrs, just 15 min. ahead of the second rope. At this time it was 10°/0 mph.

John and Dave cooked dinner in the No. 8 while we all sat around the tent. We toasted our collective Vagmarken victory with a fifth of cherry brandy that Campy brought along. We also discussed the merits Jack had to return with all deliberate haste to Madrid, but others, like of continuing the descent to 10,000 ft versus staying overnight in Camp V. John and Campy, had entertained the idea of doing some minor additional climbing. Ultimately, Jack, Campy, and Horace made their departure, dragging 2 side-zip duffel bags filled with gear, intending to reach the site of our former camp and cache at 10,000 ft. They twice met and conversed with groups of Japanese climbers camped along the trail. They seemed to number about 7 or 8 and were on their way up. Some difficulty was posed to snowshoeing and dragging the duffels by the ski grooves in the fresh snow made by some of the Jap climbers who retained their skis, while others had changed to their small duck-webs.

Camp III was reached at 0115 hrs after a 3¼ hour trek, in which there was lowered visibility in the lower part due to a light snowstorm. The granddaddy of all stoutly made Japanese tents was found pitched there but it was unoccupied. Jack dug into our cache and retrieved food for breakfast. We set up the No. 7 for our overnight stay.

Saturday 7 July, Day 21. Two Groups Make Their Way Down.

The alarm clock went off at 0800 hrs. Alarm clock! Who brought that thing in here? Jack cooked the spaghetti and meatballs taken from our cache. At 0830 hrs it was 34°/0 mph and lightly snowing. Within 3 hours the crew was again moving down the Kahiltna, this timing dragging 3 duffels.

The Kahiltna had changed dramatically while the team was above. Fewer of the wands were still up and many more minor crevasses were now exposed. Campy led the easy part from 10,000 to 8,000 ft. He dozed while slogging down the monotonous slope and, drifting off trail to the left, had to be awakened by Horace. Blame that on the alarm clock.

By 7,600 ft, with Horace in the lead, they were forced to meander along the glacier far from the original trail to avoid the crevasses. It was zero ceiling much of the day. Jack took the lead before the excruciatingly hard pull up the Southeast Fork to the base camp. A less than 400 ft climb now seemed like 1,000. Finally, Campy dropped the



Fork of Tokositna Glacier South of Mt. Hunter



Moose and Mosquito Habitat Between Talkeetna and McKinley



Sunset Near the Bivouc Site at 19,500', Archdeacon's Tower With Denali Pass Behind

duffel bag to travel the final $\frac{1}{4}$ mile in search of camp, then later returned to haul up the duffel in 2 pack loads.

Campy retightened the drooping longwire antenna for Cliff Hudson's radio but was unable to make contact. Another station answered, but not Cliff's WFA7 call. The next order of business involved raiding our basecamp cache and opening a canned ham. It was cut up into large chunks and quickly eaten, along with a No. 2 $\frac{1}{2}$ can of pear halves. Jack and Horace leveled a new platform for two tents and then pitched the Logan without its rainfly. Soon, snow was melted to quench the thirst that the crew now had from eating the ham.

The upper crew made their way down to Camp III on this day, encouraged to stop there by winds and driven snow from the lower glacier.

EQUIPMENT

The Vagmarken heeded advice from others concerning especially useful equipment for the climb whenever it seemed to make sense.

From Ron and Caroline Smith came the suggestions that an aluminum grain scoop be carried, that 4-ft wands dipped in white paint and tied with nylon flutters be used, and that the water bottles be wrapped with Ensolite to keep their contents from freezing. Each of these ideas paid off.

Snowshoes were recommended variously to be standard flat— or Green Mountain bearpaws (the Smiths) or, contrawise, large, high-floatation types (China Lake Mountain Rescue Group). The high incidence of crevasse punchthroughs by non-leading wearers of the former kind points to the wisdom of using the latter kind for the conditions on Mt McKinley.

The rectangular, 5-gal can was most useful for bringing snow into the tent for melting.

An innovation suggested by the China Lake Mountain Rescue Group was the use of 1-qt thermos bottles for hot beverages and soups. These were also employed for water storage overnight. Of the 7 thermos bottles supplied, 2 were quickly broken in handling, and it was concluded that models having plastic inserts are better than those with glass.

Sunday 8 July, Day 22. Marooned in Basecamp.

The basecamp trio slept until 0830 hrs. A radio call was sent out at 0900 hrs but there was no response except for a call from KTA51 Chelatina Lodge informing that Cliff's transmitter was down. A further call was put out with glacier weather conditions transmitted in the blind, and Cliff suddenly came up with information we already knew: weather was no better at Talkeetna and there was no chance for a pickup.

The crew found itself with all kinds of time on its hands. Books were taken out for reading, and for the first time in several days, Jack and Horace got caught up in their sleep. There was a high interest in eating. Some of the better snacks left over in the now-departed Oregon group's cache was selected out for lunch. An unopened canned ham from our own supplies was reserved for the four who had still not arrived.

Further contacts were made with Cliff at 1200, 1600, and 1800 hrs but the word was always the same: Weather still below minimum; call again later. Cliff's transmitter failed briefly on the noontime contact due to a blown fuse.

Moisture condensed in the tent so the rain fly was added. No specific additional tasks were performed. The trio just read, slept, and ate, and then started over again.

Meanwhile, Bud, Dave, John, and Tom made their trek down the Kahiltina Glacier and finally came into basecamp near midnight with frost on their beards. Hot water that was stored in thermoses was quickly converted to a sugary Darjeeling spice tea for the newcomers, and it was consumed with approval. They pitched the No. 8 and by 0200 hrs, after they had tired of throwing dried prune pits against the other tent, we all went to sleep.

Monday 9 July, Day 23. Return to Talkeetna

Campy called Cliff Hudson at 0710 hrs. Again nothing doing; the cloud level was high and widely broken within view of base camp, but out Talkeetna way it was still unacceptable for flying. Just the same, we began making some order out of the remaining provisions and gear in case the situation suddenly changed and Cliff's plane would appear. By now we were very antsy about it; our sky was almost completely free of clouds.

Our noon radio call went unanswered. The same occurred with a relay of our weather data by KTA51. At 1315 hrs, WJY7 came on with the message that Cliff was in the air to pick up another client and he would try to pick us up soon. It took us no time at all to finish our packing.

Increasing cloudiness was noted with dismay as the afternoon wore on. We entertained ourselves with horseplay. We took pictures of ourselves and of pissholes in the snow, and indulged in having wandfights and pursuing other, generally unproductive outlets. Just as Jack began using the latrine Cliff's plane was heard coming up the glacier and it landed and taxied into camp and our camera view before Jack's work was completed.

Jack said "First ones in; first ones out", and he and Campy brought their gear to load on the plane. Cliff put aboard the packs, snowshoes, and some of the team gear that was passed to him, and then instructed Jack and Campy to walk up the glacier to the beginning of a higher takeoff point. This they did while the plane taxied behind. Climbing aboard with the plane now headed down-glacier, the door was closed and Cliff opened up for a long, bumpy takeoff ride down

the Southeast Ford of the Kahiltina. Finally, the smooth air was addressed by the (slightly overloaded) plane as it passed by our now dismantled base camp.

The Kahiltina Glacier was much more ragged looking now. It showed more crevasses than it did 3 weeks before, and blue pools of water inhabited the interstices between large transverse ice blocks of the glacier's lower reaches. The glacier snout could be seen in the distance. We made our eastward turn away from this great canyon, flew over the high pass (to the south of which a still-unclimbed peak of modest altitude was situated), and then passed by the terminal moraine of the Ruth Glacier near which the green-tinged slopes and verdant muskeg began. The girder railroad bridge finally was seen, and Cliff chose to bank his plane over it for a landing on the old airstrip in the center of town.

After helping Jack take his gear to the railway depot and seeing him off on the afternoon train, Campy went to the Union "76" station and lingered under a hot shower. The other Vagmarken arrived in serial plane loads and, when the gear from Cliff's cabin was recovered, all joined together to check into the Roadhouse for dinner and a night's lodging. Its rooms were clean but small, so we stored our duffels, snowshoes, and packs in the barnlike shed behind the old house, and we all felt good being there, just as if it was our own home.

Tuesday 10 July, Day 24. Sightseeing in Talkeetna and Departure

This day was both happy and sad. We knew that this would be our final day near the mountain peak that we each had chosen to devote 1/1000 of our own life-terms to climb, and our trip was near its end. The train to Anchorage was due in the afternoon.

We had several hours for wandering around the town. We saw the sights. We ate the bountiful but cheap Roadhouse meals (\$11.00/day room and board), and some of us washed our aromatic clothes at the Union "76" laundromat. Tom made sure that the post office hand-cancelled our expedition cover envelopes. We each did our own thing, as a Vagmarken group. The expedition gear, now with most of our food absent, comprised 27 pieces, and it was brought to the train station in Genet's station wagon.

Then the train came and we got aboard and were taken to Anchorage. Then we flew back to the "Lower 48", and then we drove home.

1. Tuesdays and Fridays?
2. We walked away from it.
3. Two hours on the dark side. Sun rises in the east and sets in the west. All of which informs one that Alaska clocks are 2 hours ahead of California clocks. Or is it the other way around?
4. More on this on page 37.
5. Planned since 1968, this gear is intended to permit the lowering by litter of injured climbers to a point near the 14,500 ft. base of the Buttress
6. Dave's REI Expedition tent and Tom's Logan were joined by a zipper installed on their tunnel openings. Thus were combined as one group the Vagmarken "Bad Bascombe Rasin Bunch" and the "Kings Canyon Campground Crew". Campy constituted the Kern County contingent of the latter.
7. This humble establishment now has permission to include with its name "Royal Sausage Manufactory, Purveyor by Appointment to T.M.'s the Vagmarken and Supplier for the 1973 Vagmarken Mt. McKinley Expedition.
8. Camp VI. The rationale for this accessory is contained in the Vagmarken dictum: "Comfort will not be compromised".
9. Braze failure in improperly brazed old style joint.
A decision was made to cache our loads here at 7,800 ft next to the D.A.E.P. camp, with a plastic sheet pulled over them to keep the raven away¹⁰.
10. John applied the Himalayan name "gorak" to these birds. In every conversation concerning them, they were referred to as goraks or (as on page 11) as goddam goraks.
11. A short-handle aluminum grain scoop intended for rapidly clearing snow for tent platforms or for digging snow caves. Two French shovel flukes were brought along to perform both utilitarian and rescue functions.
12. Named by Tom. Proof also that thoughts were not confined solely to the immediate physical realities of the ice and snow, although such realities are admittedly not easily dismissed when they rudely intervene by way of a fall into a crevasse.
13. Para amino benzoic acid 5% (weight) in 140 proof alcohol, an unnumbered B-Vitamin solution which is an effective sun screen. It also keeps mosquitos from withdrawing blood from a bite, with the result that no swelling or itching occurs.
14. This was the Saitma group. Three of the 7 (including the leader H. Kobayashi) reached the summit on 16 June, the remainder on 19 June.
15. We had been warned about this. Somehow, after not seeing but one or two *Corvus Corax Vulgaris* at a great distance, we became somewhat lax. In passing earlier caches down below we observed some which had been torn into, and others which contained food that had not.
16. Standing on the rope as a means of slowing the lead is an expedient to which the present writer has heretofore been spared.



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